ATTENTION!

Please fill out and return!

Your new Hurricane Compressor is covered by the warranty as explained in the warranty section in the end of this manual. Please fill in the following information and mail or fax this sheet back to the attention of the warranty department within 10 days of start-up of the unit to register your compressors. Thanks.

Mailing Address: **Warranty Department**
Atlas Copco Hurricane LLC
1015 Hurricane Road
Franklin, Indiana 46131

Phone Number: **317-736-3800**

Fax Number: **317-736-3801**

Compressor Model Number__________________ Compressor Serial Number________________

Date Placed In Service______________________ Hour meter Reading_____________________

End User Company Name____

End User Company Street Address____

End User City, State, Country, Zip____

End User Company Contact Person____

End User Telephone and Fax Numbers____

Distributor Name, City, State, Country____

Comments or Suggestions:

B7-41/1000

350 PSIG SUCTION
1000 PSIG DISCHARGE
2400 SCFM CAPACITY



OPERATION / SERVICE / PARTS MANUAL

BILL OF MATERIAL 10206

CO-AX AIR OPERATED VALVE AUTOLOAD / UNLOAD SYSTEM
AUTO ENGINE IDLE WHEN UNLOADED
BURGESS-MANNING INLET SCRUBBER
FOUR POINT LIFTING
+50°F APPROACH AFTERCOOLING
#2 & #4 HOUSINGS WITH RINGFEDER COUPLING
MURPHY PV100 ENGINE MONITOR
CAT C7 T3 250HP@1899RPM DRIVE ENGINE

OPERATION, MAINTENANCE AND PARTS MANUAL
GENERAL SAFETY

How to Work Safely With Your Compressor

Before You Start the Compressor

- Check all fluid levels and for possible leaks
- Use adequate pressure rated hoses and couplings with proper cable restraints
- Remove all tools and/or loose items from engine and pumper areas including fan area

Use of Compressed Air

- Air from this machine is NOT fit for human consumption- **do NOT use air for breathing for food processing**
- Never operate in an enclosed area
- Never use compressed air to clean your clothes; and never direct it at another person **- IT CAN KILL**
- Wear eye protection

Other Safety Precautions

- Do not touch hot surfaces or moving parts - such as piping, exhaust, coolers
- Do not adjust or restrict safety relief valves
- Do not disconnect or alter shutdown sensors or switches
- Do not clean machine with gasoline or volatile fluids
- Do not refuel while machine is running; shutdown and allow to cool before refueling
- Do not jump-start with cable connections direct on battery. Connect ground last, away from battery or frame

Servicing

- Disconnect battery if mechanical work is being performed
- Remove radiator cap with caution, it may be pressurized when hot
- Wipe up any spills resulting from servicing

Lifting Procedure

Designated personal shall do lifting or hoisting. The load capacity rating shall be clearly marked on hoist. Do not exceed load rating. Inspection and testing for cracks or defects in hoist system shall be performed on a regular basis. Before lifting, alert personnel in immediate areas. Do not stand under unit while it is being moved from one area to another on a hoist. Do not stand under unit to do service work.

Read Manufacturer's Service Manual Before Operating Compressor/Booster

Failure to heed any of the above warnings or misuse of the compressor/booster even though not previously mentioned herein may result in severe injury or death, property damage, and mechanical failure, for which Atlas Copco Hurricane nor the Compressed Air and Gas Institute can be held responsible.

GENERAL SAFETY (continued)

If an operator cannot read or understand the manufactures safety and operating instructions, we strongly suggest the employer read (translate) and explain this information to the operator.

Important Safety Instructions
Look for these signs, which point out potential hazards to the safety of you and others. Read and understand thoroughly. Heed warnings and follow instructions. If you do not understand, inform your supervisor.



Indicates the presence of a hazard, which **WILL** cause ***severe*** injury, death or property damage, if ignored.



Indicates the presence of a hazard, which **CAN** cause ***severe*** injury, death or property damage, if ignored.



Indicates the presence of a hazard, which **WILL** or **CAN** cause injury, death or property damage, if ignored



Indicates important setup, operating or maintenance information.

California Proposition 65 Warning – Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.

Warnings: This machine produces loud noises with the service valve vented. Extended exposure to loud noise can cause hearing loss. Always wear hearing protection when service valve is vented.

Warning: High-pressure air can cause severe injury or death. Relieve pressure before recovering filter plugs, caps, fittings or covers.

Danger: Air pressure can remain trapped in air supply line, which can result in serious injury or death. Always carefully vent air supply line at vent valve before performing any service.

Warning: Do not remove the pressure cap from a HOT radiator. Allow radiator to cool before removing pressure cap.

Danger: Disconnected air hoses whip. They can cause severe injury, death or property damage. Always use cable restraints.

GENERAL SAFETY (continued)

Warning: Never run unit with guard covers or screens removed. Keep hands, hair, clothing, tools, air gun tips, etc. away from moving parts.

Hazardous Substance Precaution
The following substances are used in the manufacture of this machine and may be hazardous to health if used incorrectly.

Substance	**Precaution**
Antifreeze	Avoid ingestion, skin contact and breathing fumes
Compressor Lubricating Oil	Avoid ingestion, skin contact and breathing fumes
Engine Lubricating Oil	Avoid ingestion, skin contact and breathing fumes
Preservative Grease	Avoid ingestion, skin contact and breathing fumes
Rust Preventative	Avoid ingestion, skin contact and breathing fumes
Diesel Fuel	Avoid ingestion, skin contact and breathing fumes
Battery Electrolyte	Avoid ingestion, skin contact and breathing fumes

The following substances may be produced during the operation of this machine and may be hazardous to health.

Substance	**Precaution**
Engine Exhaust Fumes	Avoid breathing
Engine Exhaust Fumes	Avoid build-up of fumes in confined spaces

COMPRESSOR

CAPACITY @ 350 PSIG SUCTION @ 700 PSIG DISCHARGE @ 1925 RPM	2400 SCFM

SEE CAPACITY SHEET IN OPERATION SECTION FOR MORE DETAIL

MAXIMUM DISCHARGE PRESSURE	1000 PSIG
OPERATING SPEED	1200 RPM - 1925 RPM
MAXIMUM OVERALL COMPRESSION RATIO FROM SUCTION	2.78:1

ENGINE

MODEL	CATERPILLAR C7 T3
RATING	250 BHP @ 1800 RPM IND-C INTERMITTENT CURVE
FUEL	DIESEL
ELECTRICAL SYSTEM	24 VDC

BOOSTER MEASUREMENTS

OVERALL LENGTH	8'-10" (106")
OVERALL HEIGHT	6'-8" (81")
OVERALL WIDTH	5'-11" (71")

WEIGHT

DRY	6850 POUNDS
WET	7870 POUNDS

(WET INCLUDES OIL, OIL, COOLANT, FUEL, BATTERIES)

FLUID CAPACITIES

PUMPER LUBRICATING OIL	2.25 GALLONS (INCLUDES FILTER)
ENGINE LUBRICATING OIL	7.50 GALLONS (INCLUDES FILTER)
COOLANT SYSTEM	22 GALLONS
FUEL TANK	80 GALLONS

PUMPER

STROKE	5.00"
1ST STAGE DIAMETER	2.50" x 4 CYLINDERS

SAFETY RELIEF VALVE SETTINGS

SUCTION	450 PSIG
1ST STAGE	1200 PSIG

SET PRESSURES

UNLOAD VALVE REGULATOR	100 PSIG
BACK PRESSURE REGULATOR	400 PSIG
DISCAHRE PRESSURE SWITCH	1000 PSIG MAXIMUM, OR DESIRED UNLOAD PRESSURE

SHUT DOWN SET POINTS

SUCTION HIGH GAS TEMPERATURE	160ºF
1ST STAGE HIGH GAS TEMPERATURE	400ºF
LOW PUMPER OIL PRESSURE	20 PSIG
ENGINE OVERSPEED	2100 RPM

BATTERIES

SIZE	1231MF
CCA @ 32ºF	1260
CCA @ 0ºF	1100
BATTERY VOLTAGE	12 VDC
CIRCUIT	SERIES
CIRCUIT VOLTAGE	24 VDC
QUANTITY	2

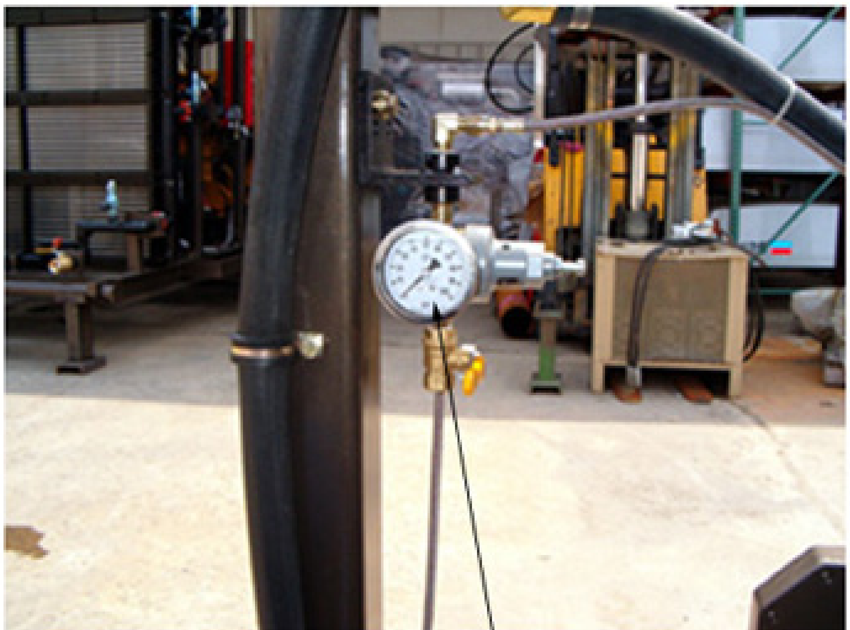
INSTRUMENT PANEL
SHUTDOWN SETPOINTS

SUCTION HIGH GAS
TEMPERATURE 160deg. F

DISCHARGE HIGH GAS
TEMPERATURE 400deg. F

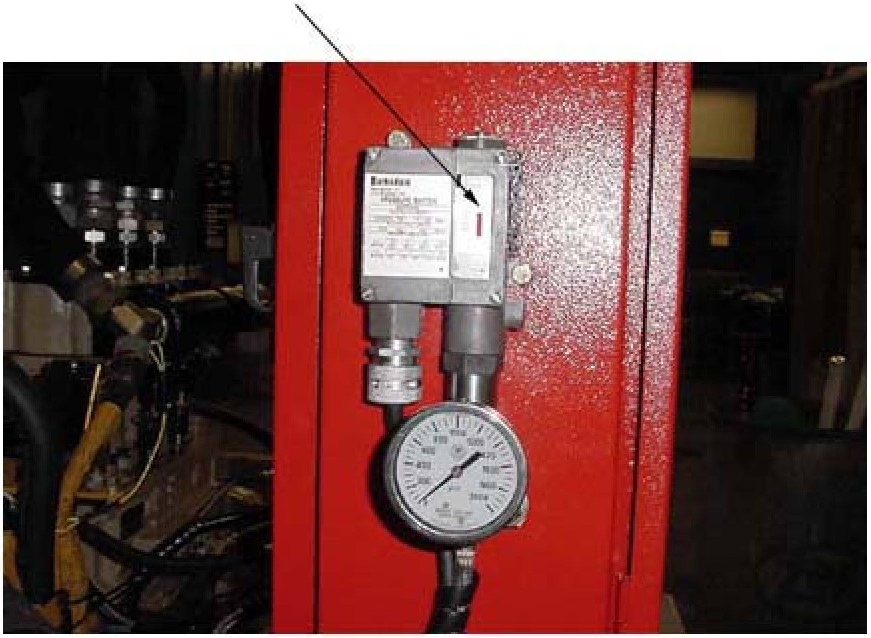


LOW PUMPER OIL
PRESSURE 20 PSIG



UNLOAD VALVE REGULATOR
SET AT 100 PSIG

Discharge pressure switch set at desired unload pressure
1000 psig maximum



Cat Electronic Technician 2006A v1.0
Configuration

10/10/2007 12:53 PM

C7 IND (JTF02251)

Parameter	Value
Equipment ID	NOT PROGRAMMED
Engine Serial Number	JTF02251
ECM Serial Number	12976435JM
Personality Module Part Number	2947934-00
Personality Module Release Date	JUN06

Description	Value	Unit	TT
C7 IND (JTF02251)			
ECM Identification Parameters			
Equipment ID	NOT PROGRAMMED		0
Engine Serial Number	JTF02251		0
ECM Serial Number	12976435JM		
Personality Module Part Number	2947934-00		
Software Group Release Date	Jun2006		
Selected Engine Rating			
Rating Number	2		0
Rated Power	251 HP at 2200 RPM		
Rated Peak Torque	842 lb-ft at 1400 RPM		
Top Engine Speed Range	1800 - 2420 RPM		
Test Spec	0K7242 0K8170		
Top Engine Limit	Unavailable	RPM	
Engine Acceleration Rate	50	RPM/s	1
Low Idle Speed	1200	RPM	1
PTO Mode	Ramp Up/Ramp Down		0
High Idle Speed	1925	RPM	1
Intermediate Engine Speed	1200.0	RPM	1
Maximum Engine Torque Limit	842	lb-ft	0
Customer Password #1	********		

Customer Password #2	********		
FLS	6		0
FTS	-24		0
Ether Control	Disabled		0
Ether Solenoid Configuration	Not Installed		0
Air Inlet Heater Installation Status	Unavailable		
Air Shutoff	Disabled		0
Maintenance Indicator Mode	Off		
PM1 Interval	0	Gal	
Throttle Position Sensor	Not Installed		0
Coolant Level Sensor	Installed		1
Direct Fuel Control Mode	Data Invalid		
Exhaust Valve Actuation System Installation Status	Unavailable		
Last Tool to change Customer Parameters			
Last Tool to change System Parameters	NEVER S		
Auxiliary Temperature Sensor Installation Status	Not Installed		
Auxiliary Pressure Sensor Installation Status	Not Installed		
Throttle Input Low Idle Duty Cycle Setpoint	10.0	%	0
Throttle Input High Idle Duty Cycle Setpoint	90.0	%	0
Engine Governor Primary Mode Configuration	Speed Control		
Total Tattletale	15		
Configuration Group 1			
Run Out Control	Off		0
Runout Spd Droop	Off		0
EX OFFSET SPD	Unavailable	RPM	
EX OVR SPD TRIP	Unavailable	RPM	

Cat Electronic Technician 2006A v1.0
Monitoring System Tool

10/10/2007 12:58 PM

C7 IND (JTF02251)

Parameter	**Value**
Equipment ID	NOT PROGRAMMED
Engine Serial Number	JTF02251
ECM Serial Number	12976435JM
Personality Module Part Number	2947934-00
Personality Module Release Date	JUN06

Description	**State**	**Trip Point**	**Delay Time**
Low Engine Oil Pressure			
Warn Operator(1)	On	None	8 Sec
Engine Derate(2)	On	None	8 Sec
Engine Shutdown(3)	On	None	4 Sec
High Engine Coolant Temperature			
Warn Operator(1)	On	226 Deg F	10 Sec
Engine Derate(2)	On	232 Deg F	10 Sec
Engine Shutdown(3)	On	232 Deg F	10 Sec
Engine Overspeed			
Warn Operator(1)	On	2100 RPM	1 Sec
Engine Shutdown(3)	On	2300 RPM	1 Sec
High Engine Inlet Air Temperature			
Warn Operator(1)	On	167.0 Deg F	8 Sec
Engine Derate(2)	On	174.2 Deg F	8 Sec
Low Coolant Level			
Warn Operator(1)	On	None	10 Sec
Engine Derate(2)	On	None	10 Sec
Engine Shutdown(3)	On	None	10 Sec
High Fuel Pressure			

Warn Operator(1)	On	109.9 PSI	8 Sec
High Auxiliary Temperature			
Warn Operator(1)	Off	221 Deg F	4 Sec
Engine Derate(2)	Off	223 Deg F	4 Sec
Engine Shutdown(3)	Off	225 Deg F	4 Sec
High Auxiliary Pressure			
Warn Operator(1)	Off	218 PSI	4 Sec
Engine Derate(2)	Off	218 PSI	3 Sec
Engine Shutdown(3)	Off	218 PSI	3 Sec

PRIOR TO START UP

1) SET THE BOOSTER ON LEVEL GROUND NOT TO EXCEED 5deg. IN ANY DIRECTION.
2) DO NOT SET BOOSTER WITHIN 8 FEET OF OTHER MACHINERY, BUILDINGS, OR ANY OBSTRUCTIONS THAT MAY HAMPER COOLING AIR FLOW TO AND FROM BOOSTER.
3) CONFIRM PRESSURE SWITCH AUTO UNLOAD PRESSURE.
4) CHECK ENGINE/PUMPER OIL AND COOLANT LEVELS.
5) DRAIN FLUID FROM INLET SCRUBBER TANK.
6) DRAIN FLUID FROM INTERSTAGE SEPERATOR TANKS.
7) CHECK THAT SUCTION HOSES ARE CLEAR OF DIRT AND DEBRIS.
8) DO NOT OPERATE WITHOUT SAFETY CABLES ON AIR HOSES.
9) DO NOT OPERATE WITH SAFETY DEVICES BY-PASSED.
10) DO NOT ATTEMPT TO START WITH AIR IN SYSTEM.
11) WARM UP PRIMARY SCREW COMPRESSORS.

START UP PROCEDURE

1) CLOSE SUCTION AND DISCHARGE VALVES.
2) CLOSE INLET SCRUBBER TANK VALVE.
3) CONFIRM EMERGENCY STOP BUTTON IS IN EXTENDED POSITION.
4) TURN UNLOAD/AUTOLOAD SWITCH TO UNLOAD.
5) TURN OFF/RUN/BY-PASS SWITCH TO BY-PASS.
6) RESET ANY TRIPPED TATTLE-TALES.
7) PUSH START BUTTON AND HOLD IN UNTIL ENGINE FIRES. DO NOT ENGAGE STARTER FOR MORE THAN 15 SECONDS INTERVALS, ALLOWING TIME FOR STARTER TO COOL.
8) HOLD OFF/RUN/BY-PASS SWITCH TO BY-PASS POSITION UNTIL PUMPER OIL PRESSURE IS ABOVE 20 PSIG. WHEN PRESSURE OF PUMPER IS ABOVE 20 PSIG, RELEASE SWITCH TO RUN POSITION. IF PUMPER OIL PRESSURE DOES NOT IMMEDIATELY CLIMB, STOP BOOSTER AND INVESTIGATE PROBLEM.
9) SLOWLEY OPEN SUCTION VALVE.
10) DO NOT LOAD BOOSTER UNTIL COOLANT TEMPERATURE REACHES 1301F.
11) SLOWLEY OPEN DISCHARGE VALVE.

AUTOMATIC BOOSTER LOADING

1) TURN UNLOAD/AUTOLOAD SWITCH TO AUTOLOAD POSITION.
2) INCREASE / DECREASE ENGINE SPEED TO MATCH DESIRED CAPACITY.
3) BOOSTER WILL BEGIN TO BUILD PRESSURE IF THERE IS SUFFICIENT RESTRICTION DOWN LINE.
4) BOOSTER WILL AUTOMATICALLY UNLOAD AND LOAD ACCORDING TO PRESSURE SWITCH SETTING.

MANUAL UNLOAD

1) TURN UNLOAD/AUTOLOAD SWITCH TO UNLOAD POSITION.

ROUTINE SHUTDOWN PROCEDURE

1) TURN UNLOAD/AUTOLOAD SWITCH TO UNLOAD POSITION.
2) ALLOW BOOSTER TO RUN FOR 5 MINUTES TO COOLDOWN.
3) CLOSE SUCTION AND DISCHARGE VALVES.
4) TURN OFF/RUN/BY-PASS SWITCH TO OFF POSITION.
5) OPEN INLET SCRUBBER TANK VALVE.

EMERGENCY SHUTDOWN PROCEDURE

1) PRESS EMERGENCY STOP BUTTON ON SIDE OF INSTRUMENT PANEL.
2) CLOSE SUCTION AND DISCHARGE VALVES.
3) OPEN INLET SCRUBBER TANK VALVE.
4) TURN OFF/RUN/BY-PASS SWITCH TO OFF POSTION.
5) TURN UNLOAD/AUTOLOAD SWITCH TO UNLOAD POSITION.

CAPACITY CHART
B7-41/1000
2.50 DIAMETER PISTONS
350 PSIG MAXIMUM SUCTION
1000 PSIG MAXIMUM DISCHARGE
2.78:1 MAXIMUM OVERALL
COMPRESSION RATIO FROM SUCTION

CAPACITY SCFM AT VARIOUS PRESSURE AND RPM

SUCTION PSIG	DISCHARGE PSIG	1925 RPM	1800 RPM	1600 RPM	1400 RPM	1200 RPM
350	1000	N/R	2160 SCFM	1920 SCFM	1680 SCFM	1440 SCFM
350	700	2440 SCFM	2280 SCFM	2030 SCFM	1770 SCFM	1520 SCFM
325	930	2150 SCFM	2010 SCFM	1790 SCFM	1570 SCFM	1340 SCFM
300	860	2000 SCFM	1870 SCFM	1660 SCFM	1450 SCFM	1240 SCFM
275	790	1840 SCFM	1720 SCFM	1530 SCFM	1340 SCFM	1150 SCFM
250	750	1680 SCFM	1570 SCFM	1400 SCFM	1220 SCFM	1050 SCFM

CAPACITY (S L/s) AT VARIOUS PRESSURE AND RPM

SUCTION BAR	DISCHARGE BAR	1925 RPM	1800 RPM	1600 RPM	1400 RPM	1200 RPM
24	69	N/R	1019	906	793	680
24	48	1152	1076	958	835	717
22	64	1015	949	845	741	632
21	59	944	883	783	684	585
19	54	868	812	722	632	543
17	52	793	741	661	576	496

VERTICAL GAS SEPARATOR

INSTALLATION & OPERATING INSTRUCTIONS

Installation Instructions:

1. Install the separator so that the direction of the flow corresponds to the flow arrow and/or the inlet and outlet markings on the separator drawing. When practical, the separator should be piped in a straight run of pipe at least eight pipe diameters downstream of any elbow, tee, or other turbulence creating devices.

2. Provide the liquid outlet (operational drain) connection with one or a combination of the following applicable devices:

   a) Manually Operated Valves
      - If unattended operation, liquid reservoir should be of suffacient volume for at least two hours residence time.

   b) A Float Liquid Drainer (Trap)
      - When installing liquid drainers, care must be taken that the equalizing lines are connected to the same pressure chamber as the drain connection.

   c) Automatic Control Valves with Level Switch / Controller

3. It is recommended that all units be equipped with a liquid level gauge. The top liquid level gauge connection is the high liquid level unless otherwise marked on the separator drawing.

Operating Instructions:

1. This separator has an internal downcomer (drain leg) from the vane mist eliminator to the bottom of the vessel. For proper operation of the vane mist eliminator, the bottom end of downcomer from the vane bundle needs to be immersed in liquid. This can be accomplished in one of two methods.

   a) Before start-up, the bottom of the vessel (or internal seal bucket, if so equipped) can be filled with water or process liquid by inserting a hose through an inspection opening or other connection.

   b) During start-up, allow the liquid level to rise above the bottom end of downcomer. Note: Until the downcomer end is immersed, the vane element will not properly drain, and liquid carryover may occur.

2. At start-up, the liquid reservoir should be checked every hour until the exact amount of liquid being removed is determined. Set up a blowdown schedule if being drained manually or adjust automatic liquid level controls as required.

3. Do not allow the liquid level to exceed the maximum liquid level shown on the drawing. Liquid carryover may occur if the separator is operated with liquid levels above the maximum.

4. If the separator downcomer does not have a seal bucket on the bottom end, do not allow the liquid level to fall below the minimum liquid level shown on the drawing (e.g. the bottom end of the downcomer). Liquid carryover may occur if the separator is operated without a liquid seal of the downcomer.

5. Inspect the separator interior on a regular basis using the inspection openings provided or other connections. Inspect the face of the vanes for corrosion, erosion and general condition. Clean or washout any accumulated solid matter.

6. The Burgess-Manning Vane Mist Eliminator is one integral unit with no parts to be replaced. There are no spare parts for these separator internals.

7. Contact Burgess-Manning, Inc. if an inspection finds damage or if there are any questions.

PREVENTATIVE MAINTENANCE SCHEDULE
IF OPERATING IN EXTREME ENVIRONMENTAL CONDITIONS (VERY HOT, COLD, DUSTY, OR WET), THESE TIME PERIODS SHOULD BE REDUCED.

R = REPLACE
C = CHECK (ADJUST OR REPLACE IF NECESSARY)
L = LUBRICATE

HOURLY
DRAIN INLET SCRUBBER TANK (OR AS NEEDED). C

CAUTION - DRAIN INLET SCRUBBER TANK MORE OFTEN AS NEEDED WHEN OPERATING DURING HIGH HUMIDITY.
DANGER - DO NOT ALLOW INLET SCRUBBER TANK FLUID LEVEL TO RISE ABOVE SIGHT GLASS.
DANGER - FAILURE TO DRAIN INLET SCRUBBER TANK MAY RESULT IN COMPRESSOR VALVE DAMAGE OR HYDRAULIC LOCK.

DAILY
WALK AROUND INSPECTION C
PUMPER OIL LEVEL C
ENGINE OIL LEVEL
C
COOLANT SYSTEM LEVEL C
AIR FILTER RESTRICTION INDICATOR C
GAUGES/LIGHTS C
FUEL TANK (FILL AT END OF DAY) C

MONTHLY
FAN BELTS C
HOSES AND CLAMPS (AIR, OIL, COOLANT) C
COOLERS AND RADIATOR C
AUTOMATIC SHUTDOWN SYSTEM (TEST) C
FASTENERS C

3 MONTHS
COOLERS AND RADIATOR (CLEAN EXTERIOR) C

250 HOURS
PUMPER OIL AND FILTER CHANGE L/R

MAINTAIN DRIVE ENGINE PER CATERPILLAR ENGINE MANUAL

DRIVE ENGINE

REFER TO CATERPILLAR ENGINE MANUALS FOR ALL CATERPILLAR ENGINE RELATED SERVICE, ADJUSTMENTS, AND SPECIFICATIONS.

DRIVE ENGINE AND PUMPER OIL LEVEL

MAINTAIN BETWEEN FULL AND ADD

CRANKCASE LUBRICATION OIL

LUBRICANT VISCOSITY CHART FOR OUTSIDE AMBIENT TEMPERATURES

OIL	AMBIENT 1F	
VISCOSITY	MINIMUM	MAXIMUM
SAE 0W-20	-40	50
SAE 0W-30	-40	86
SAE 0W-40	-40	104
SAE 5W-30	-22	86
SAE 5W-40	-22	104
SAE 10W-30	-4	104
SAE 15W-40	5	122

- SELECT OIL VISCOSITY BASED UPON MAXIMUM EXPECTED OPERATING TEMPERATURE. START UP AT LOWER THAN SPECIFIED AMBIENT TEMPERATURE REQUIRES CAUTION. START UP AT VERY LOW AMBIENT TEMPERATURES MAY REQUIRE AUXILIARY OIL HEATERS AND JACKET WATER HEATERS OR OTHER METHODS TO INCREASE CRANKCASE TEMPERATURES.

  TO DETERMINE IF THE OIL IN THE CRANKCASE WILL FLOW IN COLD WEATHER, REMOVE THE OIL DIPSTICK BEFORE STARTING. IF THE OIL WILL FLOW OFF THE DIPSTICK, THE OIL IS FLUID ENOUGH TO CIRCULATE PROPERLY.
- SELECT AN OIL WITH API CH-4 (PREFERRED) OR API CG-4 (PREFERRED) OR API CF-4 (ACCEPTABLE) CERTIFICATION.
- SYNTHETIC BASE STOCK OILS ARE ACCEPTABLE FOR USE.
- SYNTHETIC BASE STOCK OILS OUTPERFORM NON-SYNTHETIC OILS IN IMPROVED LOW TEMPERATURE VISCOSITY CHARACTERISTICS, ESPECIALLY IN ARCTIC CONDITIONS, AND IMPROVED OXIDATION STABILITY, ESPECIALLY AT HIGH OPERATING TEMPERATURES.

RECOMMENDED CRANKCASE OILS

- MOBIL DELVAC 1300 SUPER 15W-40
- MOBIL DELVAC 1300 SUPER 10W-30
- MOBIL DELVAC 1 SYNTHETIC 5W-40

RADIATOR

THE ENGINE COOLING SYSTEM IS FILLED AT THE FACTORY WITH A 50/50 MIXTURE OF DISTILLED WATER AND ETHYLENE GLYCOL. THIS IS A PERMANENT TYPE ANTIFREEZE WHICH CONTAINS RUST INHIBITORS AND PROVIDES PROTECTION TO -35deg. F. IT IS RECOMMENDED THAT THE RADIATOR BE CLEANED BY DIRECTING COMPRESSED AIR OPPOSITE FAN FLOW DIRECTION WHICH CONTAINS A NON-FLAMMABLE SAFETY SOLVENT THROUGH THE CORE OF THE COOLER FINS. VENT SYSTEM WHEN FILLING, INCLUDING PUMPER BLOCK AND COMPRESSOR VALVE COOLING FITTINGS.

COOLERS

THE COMPRESSOR SUCTION AND DISCHARGE AIR COOLS BY MEANS OF FIN AND TUBE TYPE COOLERS, LOCATED AT THE PUMPER END OF THE COMPRESSOR. THE AIR FLOWING INTERNALLY THROUGH THE TUBE SECTION IS COOLED BY THE AIR STREAM PASSING THROUGH THE FIN SECTION FROM THE FAN. WHEN GREASE, OIL, AND DIRT ACCUMULATE ON THE EXTERIOR SURFACES OF THE COOLERS THEIR EFFICIENCY IS IMPAIRED. IT IS RECOMMENDED THAT THE COOLERS BE CLEANED BY DIRECTING COMPRESSED AIR OPPOSITE FAN FLOW DIRECTION WHICH CONTAINS A NON-FLAMMABLE SAFETY SOLVENT THROUGH THE CORE OF THE COOLER FINS.

BATTERIES

HEAVY-DUTY, DIESEL CRANKING TYPE BATTERIES WERE INSTALLED AT THE FACTORY. KEEP BATTERY POST TO CABLE CONNECTIONS CLEAN, TIGHT, AND LIGHTLY COATED WITH CORROSION PREVENTATIVE. THE ELECTROLYTE LEVEL IN EACH CELL SHOULD COVER THE TIPS OF THE PLATES. IF NECESSARY, TOP-OFF WITH DISTILLED WATER.

INLET SCRUBBER TANK

DRAIN HOURLY OR AS NEEDED.

CAUTION - DRAIN INLET SCRUBBER TANK MORE OFTEN AS NEEDED WHEN OPERATING DURING HIGH HUMIDITY.

DANGER - DO NOT ALLOW INLET SCRUBBER TANK FLUID LEVEL TO RISE ABOVE SIGHT GLASS.

DANGER - FAILURE TO DRAIN INLET SCRUBBER TANK MAY RESULT IN COMPRESSOR VALVE DAMAGE OR HYDRAULIC LOCK.

AIR CLEANER

THE DRIVE ENGINE IS EQUIPPED WITH AIR FILTER RESTRICTION INDICATOR. IF THE INDICATOR SHOWS RED THE ELEMENT SHOULD BE REPLACED. THE AIR CLEANER HOUSING AND PIPING SHOULD BE INSPECTED FOR LEAKAGE PATHS OR INLET OBSTRUCTIONS.

COMPRESSOR VALVE INSPECTION

1) REMOVE SUCTION PIPING FROM BOOSTER HEAD.
2) PRESSURIZE DISCHARGE MANIFOLD WITH AIR OR NITROGEN FROM 80 PSIG TO 100 PSIG
3) CHECK ALL AREAS FOR O-RING LEAKS
4) AIR LEAKING INTO THE SUCTION PORT OF THE HEAD IS MOST LIKELY A DAMAGED INNER O-RING ON VALVE ADAPTER PLATE OR HEAD. IT COULD ALSO BE A WORN/BROKEN COMPRESSOR VALVE OR DAMAGED INTERNAL COMPRESSOR VALVE O-RING.
5) USE A STRAIGHT BLADED SCREWDRIVER TO PUSH THE INTAKE PLATE OF THE COMPRESSOR VALVE DOWN. THIS MAY REQUIRE A SLIGHT BUMP FROM THE HEEL OF YOUR HAND. A BURPING SOUND AND A SHORT RUSH OF AIR IS NORMAL. A VERY SLIGHT LEAK INDICATED BY A QUIET HISSING SOUND IS OKAY. CONTINUE BUMPING THE INTAKE PLATE AROUND THE COMPRESSOR VALVE TO CLEAN OUT ANY OIL AND/OR DEBRIS.
6) A CONTINUED RUSH AND LOUD HISSING OF AIR WHILE HOLDING THE INTAKE PLATE OPEN IS MOST LIKELY A WORN/BROKEN DISCHARGE SIDE COMPRESSOR VALVE. IT COULD ALSO BE A DAMAGED INTERNAL COMPRESSOR VALVE O-RING.

SERVICE INTERVALS

	B-41 BOM 10206	Hourly	Daily	250	500 or 1 year	1000	2000	HRS
	Service Packs Part Numbers	**NA**	**NA**	**2236 2000 04**	**2236 2000 05**	**2236 2000 06**	**2236 2000 07**	
1	Drain inlet scrubber tank & interstage seperator tank *(1)*	x	x	x	x	x	x	
2	Take service readings (air, oil temps/pressures)		x	x	x	x	x	
3	Check for air- fuel- coolant- & oil leakage		x	x	x	x	x	
4	Check electrolyte level and terminals of battery		x	x	x	x	x	
5	Check fixation of hoses, cables and pipes		x	x	x	x	x	
6	Check oil and coolant level (Pumper & Engine)		x	x	x	x	x	
7	Check air filter restriction indicator		x	x	x	x	x	
8	Check all sensitive bolt connections		x	x	x	x	x	
9	Check shutdown devices		x	x	x	x	x	
10	Check coolers and clean externally		x	x	x	x	x	
11	Check condition of cooling fan assembly		x	x	x	x	x	
12	Clean air cleaner and dust bowl		x	x	x	x	x	
13	Drain water in fuel filter		x	x	x	x	x	
14	Inspect fuel tank for condensate and drain			x	x	x	x	
15	Replace engine oil & filter				x	x	x	
16	Lubricate pumper fan drive			x	x	x	x	
17	Replace pumper oil & filter			x	x	x	x	
18	Replace engine fuel filter			x	x	x	x	
19	Check glycol & PH level in coolant *(3)*			x	x	x	x	
20	Test shutdown system			x	x	x	x	
21	Check the tension and condition of the drive belts			x	x	x	x	
22	Check all sensitive bolt connections			x	x	x	x	
23	Change element air cleaner primary				x	x	x	
24	Change element air cleaner safety cartridge				x	x	x	
25	Change Pumper O-rings					x	x	
26	Check piston and replace if needed *(4)*					x	x	
27	Change valves						x	

(1) Drain more often as needed when operating during high humidity
(2) Use genuine ParOIL
(3) PARcool change interval = min. every 5 years
(4) Piston service pack can be ordered : Service Pack # 2236 2000 08

Hurricane Compressors

Booster Fogging Procedures

If the booster is not going to be used for a period over 7 days, the following procedure should be used to minimize internal rusting of booster components

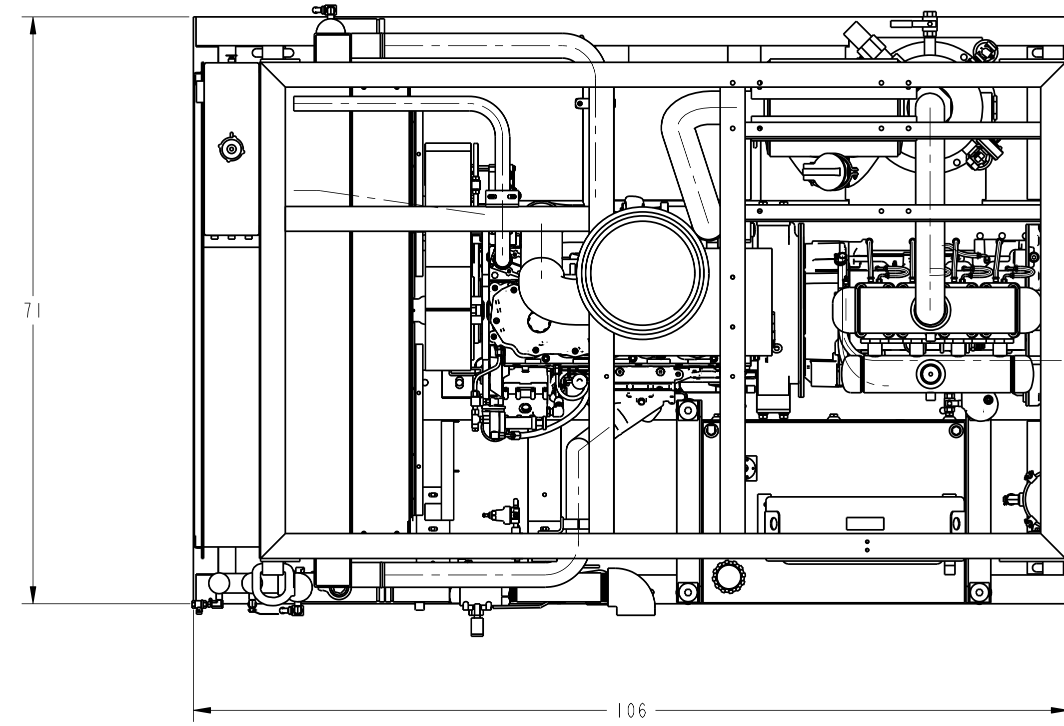
Do not run the drive engine at any point during this procedure

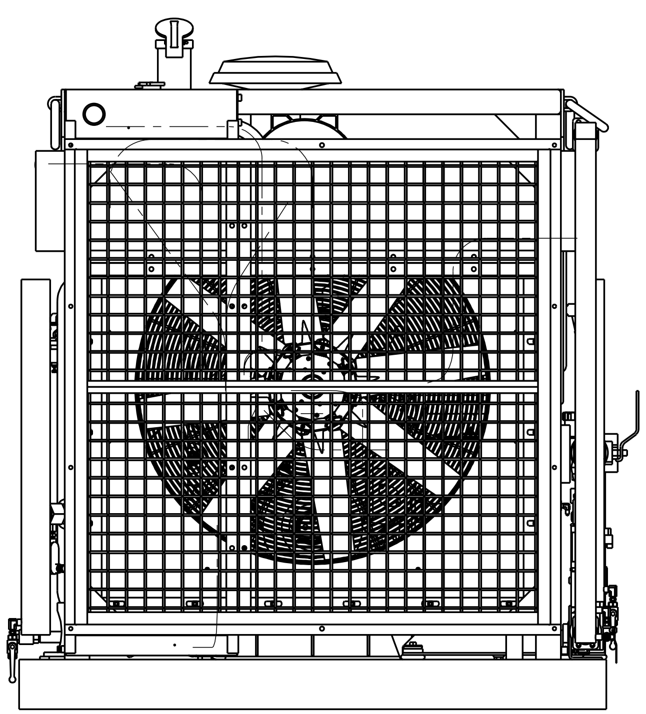
1. Drain all water from the scrubber tank(s) and close the valve(s)
2. Prepare the sprayer with a 50/50 mix of engine oil and volatile corrosion inhibitor (VCI) oil (HPN 64117)
3. Remove connections at booster suction and discharge valves
4. Open the booster suction **and** discharge valves

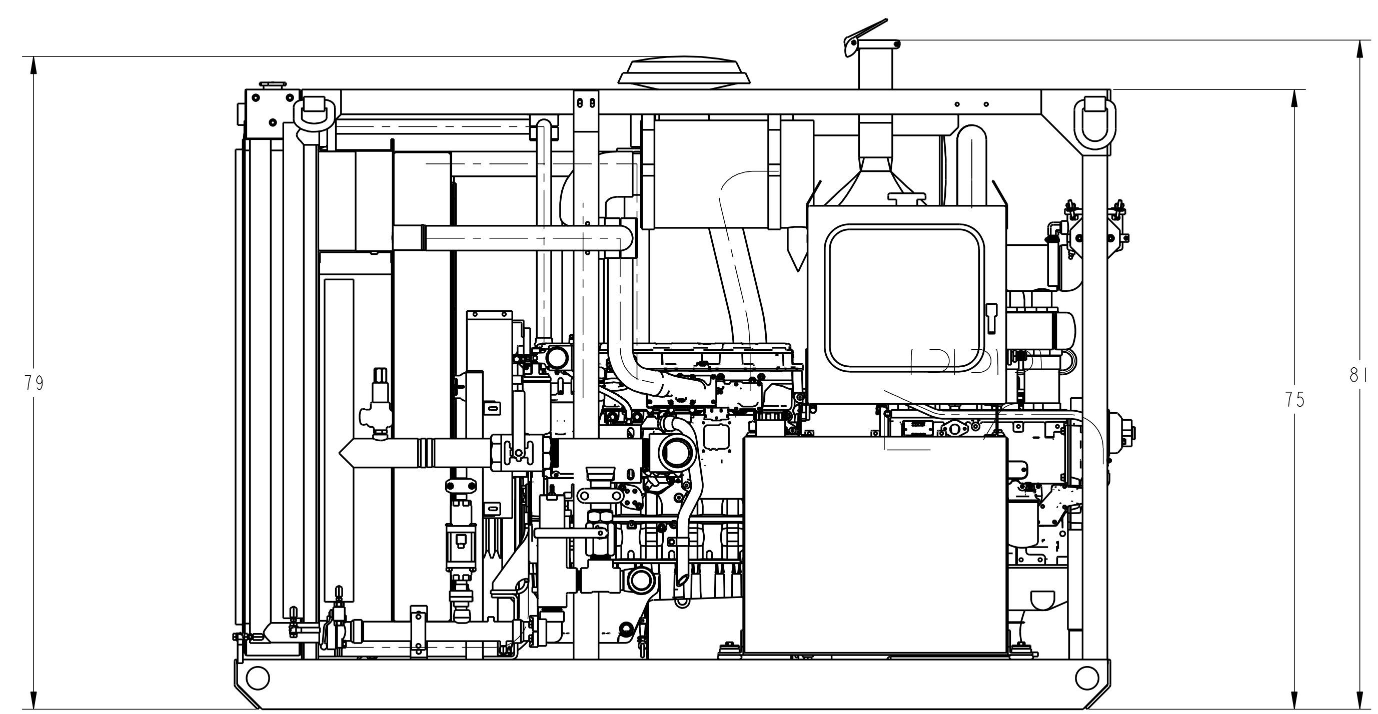
Do not allow the engine to start during step 5

5. Crank the drive engine at 15 second intervals, pausing one minute between cranking, while spraying the oil mixture into the suction valve
6. Repeat step 5 until oil mist is visible from discharge valve, a minimum of 6 ounces is recommended
7. Close booster suction valve/connection
8. Close booster discharge valve/connection
9. Plug pumper block breather hoses
10. Ensure that the scrubber tank valves are closed and **the system is completely sealed**

10206	D







DO NOT SCALE DRAWING

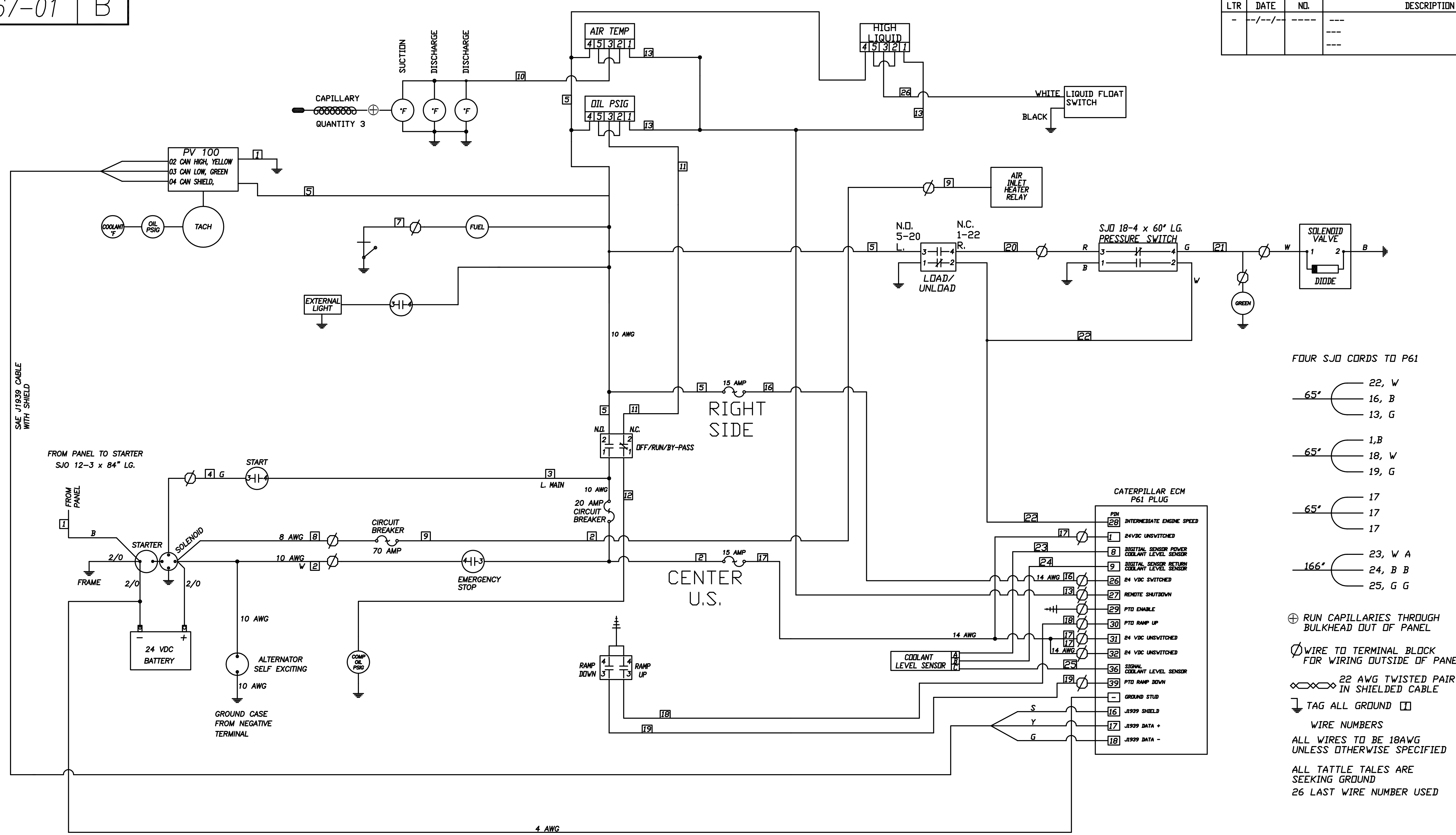
DRAWING TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL:
ALL SHEAR DIMS ± 0.031 in. ALL FORM DIMS ± 0.062 in. ALL WELD DIMS ± 0.093 in. ALL SAW CUT DIMS ± 0.062 in. ALL ANGLES ± 1°	DESCRIPTION: . PART NO: . SPECS:

hurricane compressors — 1015 N. Hurricane Rd / Franklin, IN 46131-9501 — ph 317-736-3800 fax 317-736-3801 jeg@inetdirect.net

DRAWN	JR	APPROVED	.	INFORMATION UPON THIS DRAWING IS PROPRIETARY AND CONFIDENTIAL. DISCLOSURE BY ANY MEANS IS EXPRESSLY FORBIDDEN WITHOUT WRITTEN APPROVAL.	PRO-E
DATE	12-20-07	APR. DATE	.		
REQ'D	1	TITLE 7T-276-41B			
SCALE	.				
SHEET	1 OF 1	PRODUCT PB		10206	D
Pro/E Drawing					

21867-01 | B

REVISIONS				
LTR	DATE	NO.	DESCRIPTION	DRWN
-	--/--/--	-----	--- --- ---	---



FUEL	72"	16-3
LIGHT	171"	16-3
BARKSDALE	64"	18-4
STARTER	84"	12-3
HEATER	75" & 60"	10AWG
BYPASS	98"	16-3
LOW COOLANT	166"	16-3
CAT PLUG TO ENGINE	65"	16-3
LIQUID FLOAT SWITCH	60"	16-3

DO NOT SCALE DRAWING

MATERIAL:	APPROVAL
DESCRIPTION:	ENG.
PART NO:	MFG.
SPECS:	

hurricane compressors
1015 N. Hurricane Rd / Franklin, IN 46131-9501 ph 317-736-3800 fax 317-736-3801 jeg@inetdirect.net

DRAWN	PNC
DATE	03/30/07
REQ'D	
SCALE	NONE
SHEET	1 OF 1
AutoCAD R14	

TITLE SCHEM, WIRING 6T-276-41B

PRODUCT 6T-276-41B

21867-01 B

ECN	LTR.	DATE	NO.	DESCRIPTION	BY:
	C	03-09-09	——	ADDED BPR REMOVED CHECK VALVE	DES

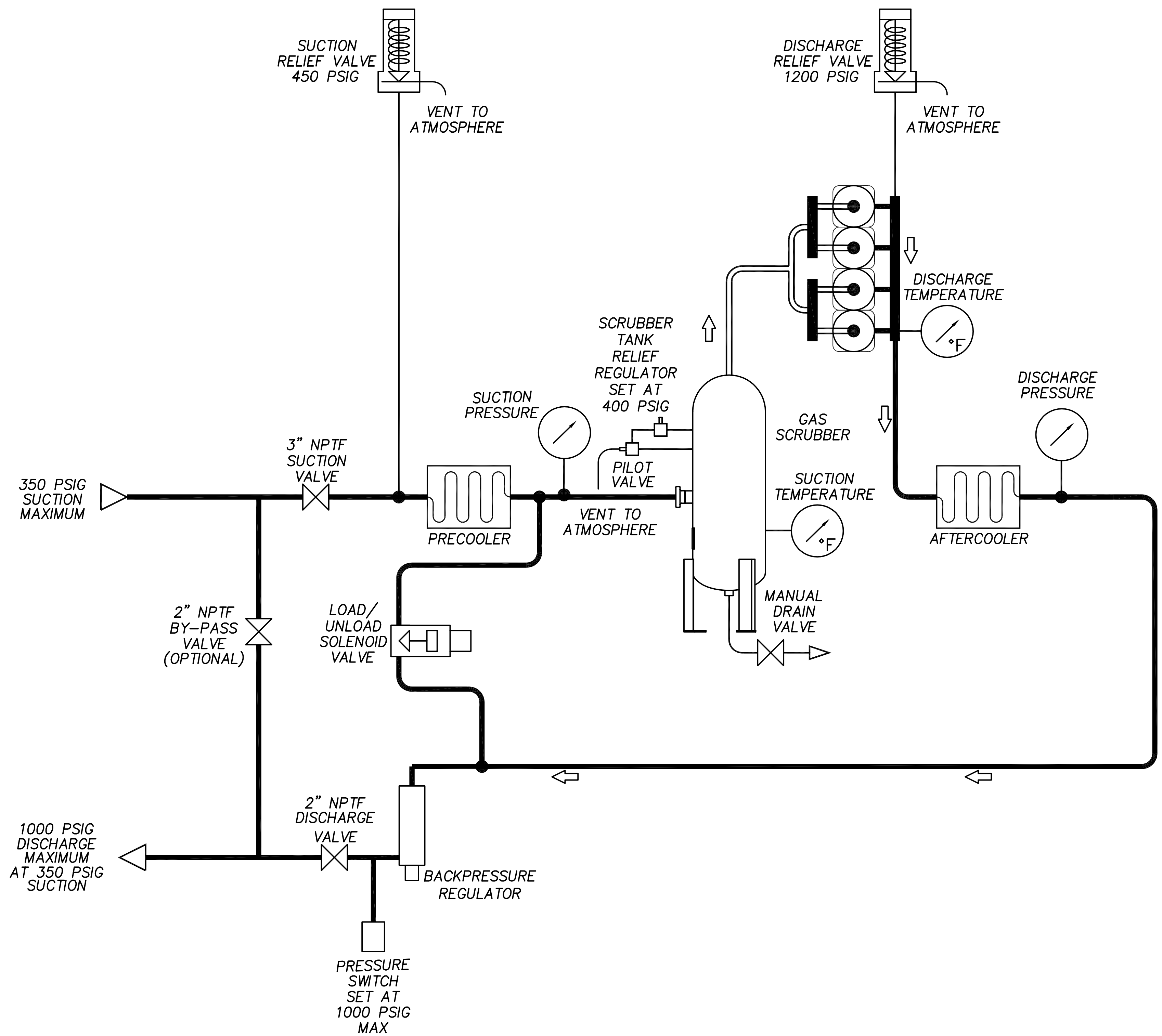
hurricane compressors

1015 North Hurricane Road / Franklin, Indiana 46131-9501
(317) 736-3800 / fax (317) 736-3801

Model 7T-276-41B/1000

General Plumbing Arrangement

21256.DWG
07-25-03

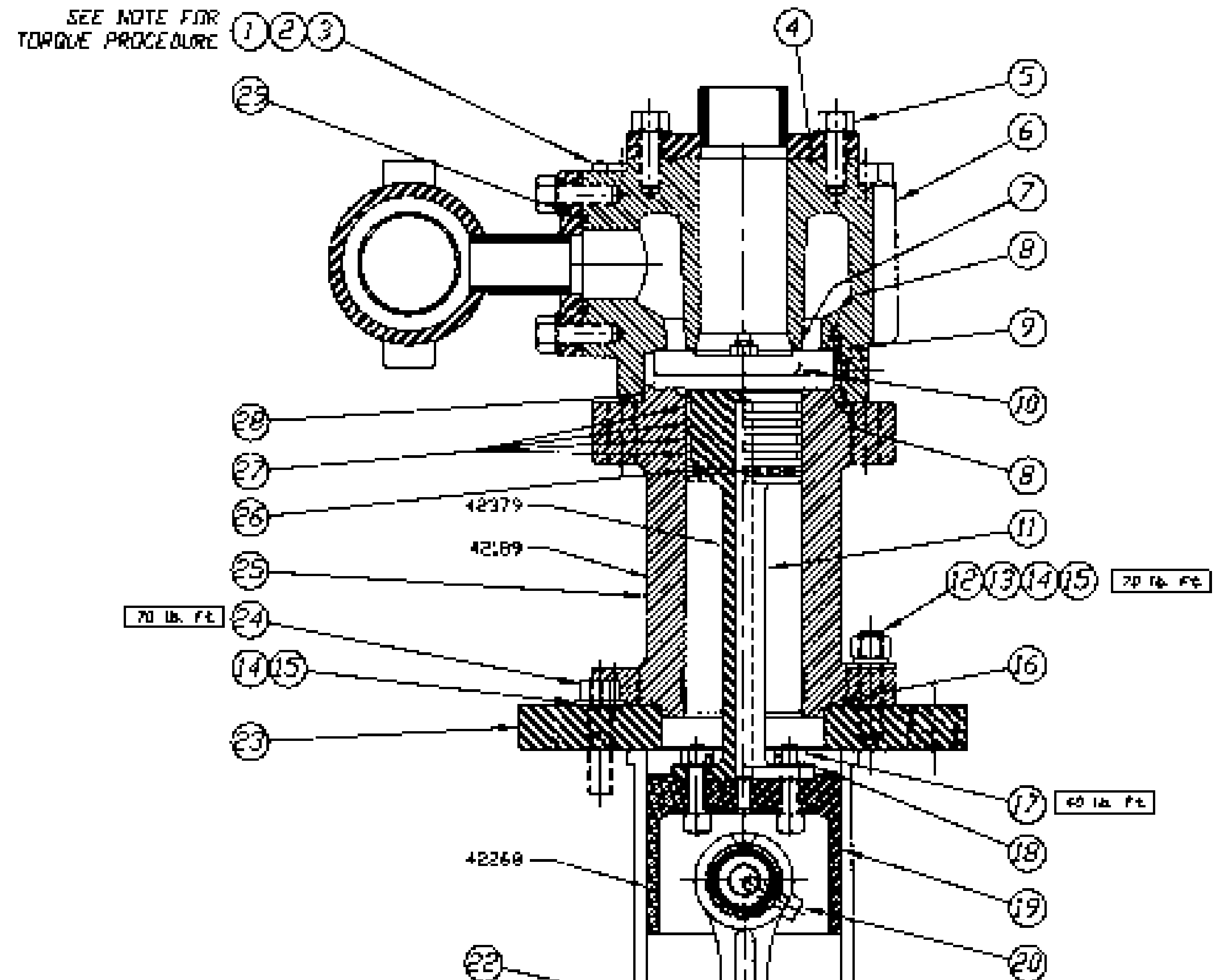


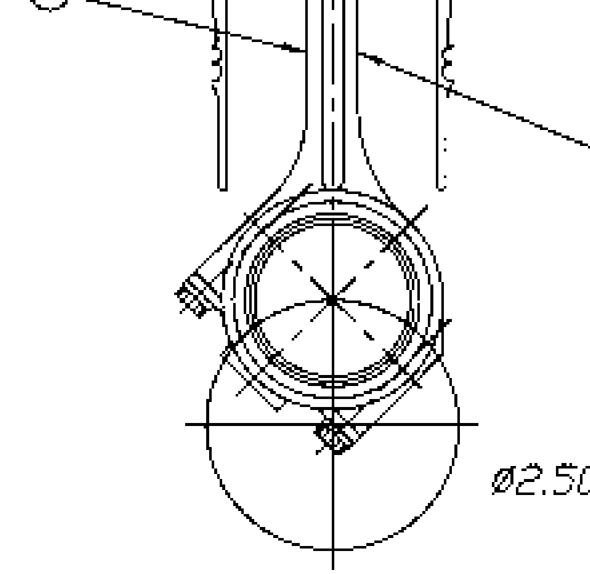
hurricane compressors
1015 North Hurricane Road / Franklin, Indiana 46131-9501
(317) 736-3800 / fax (317) 736-3801

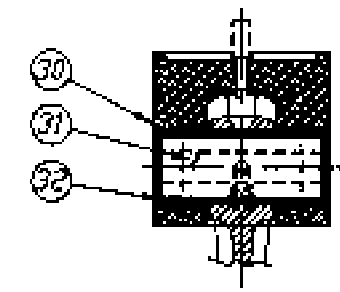
6T-276-41B/700 (2275 SCFM) COMPR ASS'Y ILLUSTRATION

ITEM	P/N	DESCRIPTION	QTY.
1	80037	HHCS, 5/8-11 x 6" LG.	16
2	80181	WASHER, 5/8" FLAT SAE	16
3	80110	WASHER, 5/8" SPLIT LOCK	16
4	60056	O-RING, 2-233	4
5	80093	HHCS, 7/16-1" GR8	32
6	42374	HEAD, COMPRESSOR	4
7	61395	O-RING, 2-034	4
8	61392	O-RING, 2-043	8
9	80398	PIN, DOWEL Ø5/32" x 1	4
10	41643	VALVE, COMPRESSOR	4
11	42379	PISTON, COMPR 2.50 DIA.	4
12	80332	STUD, 1/2-13 x 2 1/4" LG.	16
13	80101	HEX NUT 1/2-13	16
14	80109	WASHER, 1/2" SPLIT LOCK	34
15	80106	WASHER, 1/2" FLAT SAE	34
16	60048	O-RING, 2-154	4
17	80099	HEX NUT	8
18	40013	LOCK PLATE	8
19	42268	PISTON ASSY. 276 CROSSHEAD	4
20	80378	SHCS, M8-1.25 x 25 LG SELF LOCK	4
21	51035	ROD, CONNECTING/PIN AND SLEEVE (STEEL) ASSEMBLY	4
22	50928	XHD/ROD ASS'Y, JD 4045 ROLLER BEARING	4
23	42106	BASEPLATE ASS'Y, 276 CYL.	1
24	80125	HHCS, 1/2-13 x 2 1/2" LG.	18
25	42189	CYL., COMPR. 2.50 DIA.	4
26	40992	RING, OIL	4
27	62695	RING, COMPRESSION	16
28	63580	O-RING, 2-156	4
29	61396	O-RING, 2-225	4
30	63549	SNAP RING, PISTON PIN	8
31	42173	PIN, B3.9 N.B. PISTON	4
32	63548	BEARING, NEEDLE PIST. PIN 276 BEARING # INA NK 30/20	8

NOTE: ITEM 22, HCPN 50928 INCLUDES ITEMS 19, 20, 21, 22, 30, 31, &32







NOTE: TORQUE PROCEDURE

1) INSTALL HEAD AND SLIGHTLY TIGHTEN HHCS IN AN EVEN PATTERN MAKE CERTAIN HEAD, VALVE, AND CYLINDER ARE SQUARE TO ONE ANOTHER.

2) TORQUE HEAD HHCS IN A CRISS CROSS PATTERN IN 3 EQUAL STEPS TO 65 LB-FT.

3) TORQUE HEAD HHCS IN A CRISS CROSS PATTERN TO 75 FT-LB.

4) MAKE SURE NO HHCS IS TIGHTER THAN 75 LB-FT.

21359

01-20-04

hurricane compressors
1015 North Hurricane Road / Franklin, Indiana 46131-9301
(317) 736-3800 / Fax (317) 736-3801

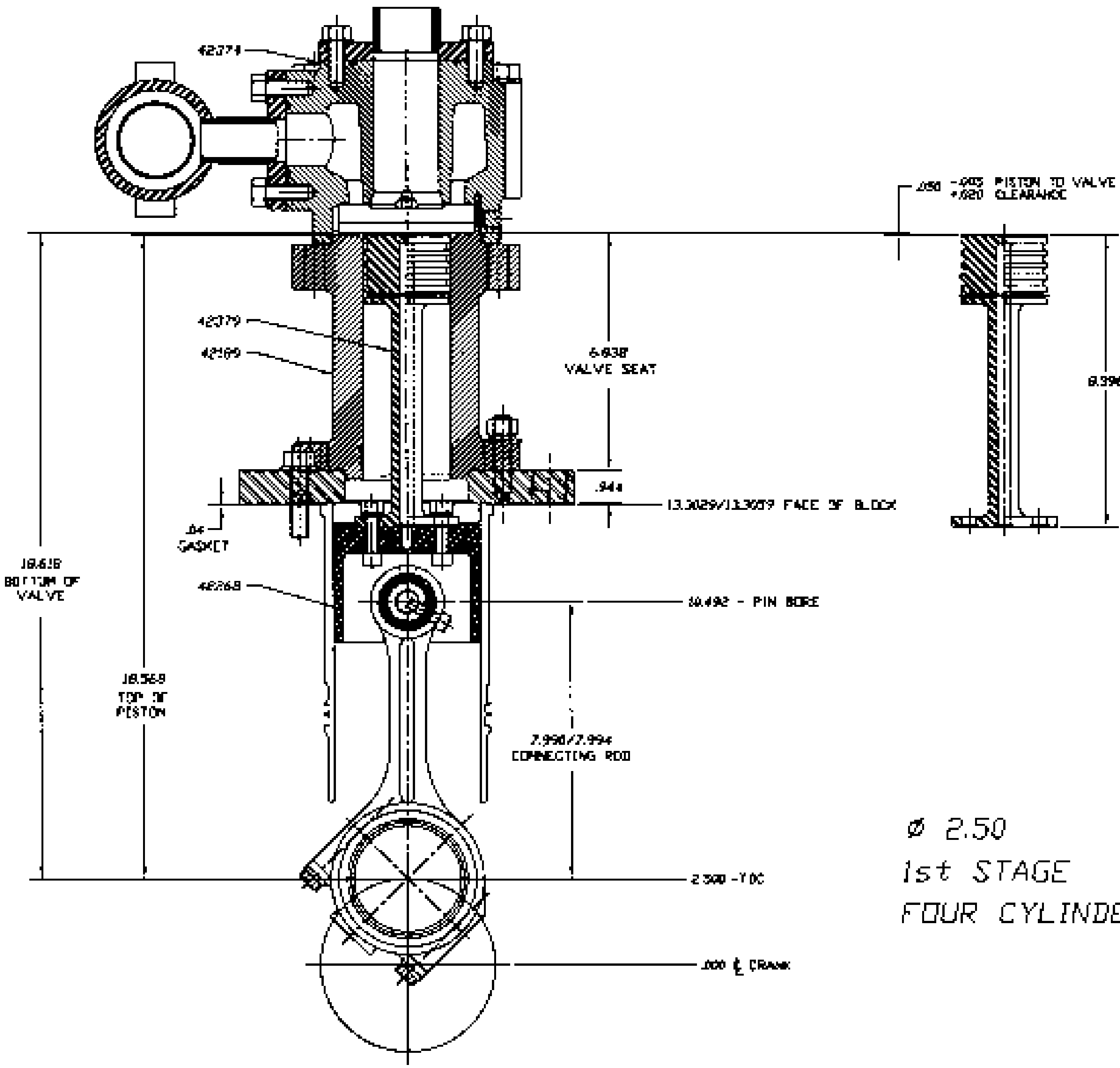
Illus. Compr. Assy. 6T-276-41B/700 (2275 SCFM)

21360dwg 01-20-04

Dimensional tolerance stack up

NOTE
ALL HURRICANE COMPRESSORS STACK-UP TOLERANCES PERTAINING TO PISTON TO VALVE CLEARANCE TO BE +.001/-.001 FROM NOMINAL

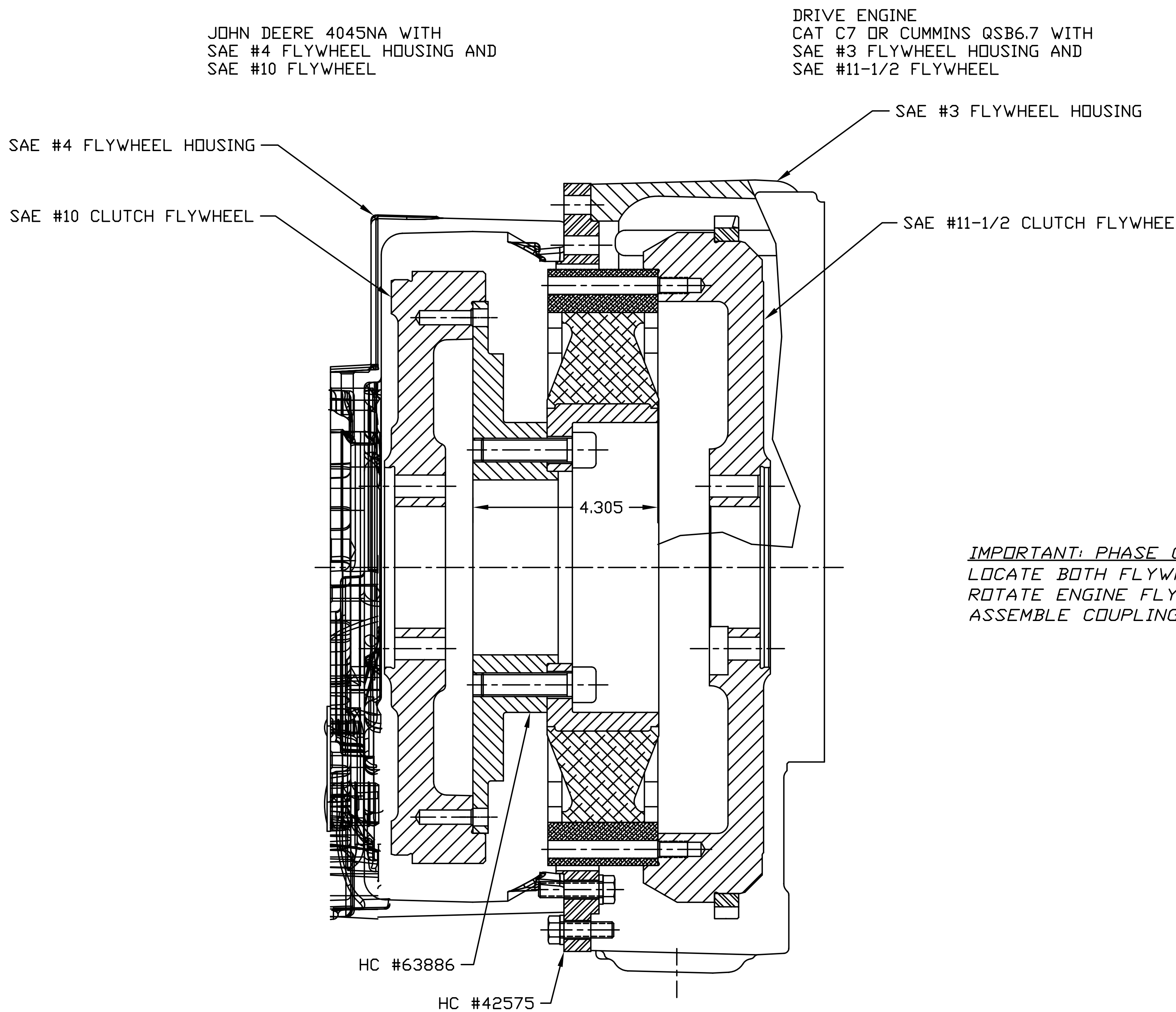
LINER PROTRUSION .0024/.0062
LINER COUNTER BORE DEPTH .2347/.2357



Ø 2.50
1st STAGE
FOUR CYLINDERS

VALVE	41643
SWEPT DISP.	24.54 IN^3
VALVE CV	.089 IN^3
CYL. CV	1.57 IN^3
TOTAL CV	2.8 %

21971	C



IMPORTANT: PHASE COUPLING
LOCATE BOTH FLYWHEELS AT #1 TDC.
ROTATE ENGINE FLYWHEEL -10deg. CCW
ASSEMBLE COUPLING.

1. INSTALL FLYWHEEL HOUSING ADAPTER RING TO PUMPER FLYWHEEL HOUSING USING DIAL INDICATOR GAUGE ON PUMPER FLYWHEEL TO ZERO IN CONCENTRICITY.

DO NOT SCALE DRAWING

DRAWING TOLERANCES UNLESS OTHERWISE SPECIFIED	MATERIAL:	APPROVAL	hurricane compressors 1015 N. Hurricane Rd / Franklin, IN 46131-9501 ph 317-736-3800 fax 317-736-3801 jeg@inetdirect.net			
ALL SHEAR DIMS ± 0.031 in.	DESCRIPTION:	ENG.	DRAWN	DES	INFORMATION UPON THIS DRAWING IS PROPRIETARY AND CONFIDENTIAL. DISCLOSURE BY ANY MEANS IS EXPRESSLY FORBIDDEN WITHOUT WRITTEN APPROVAL.	
ALL FORM DIMS ± 0.062 in.			DATE	10-9-07		
ALL WELD DIMS ± 0.093 in.	PART NO:	MFG.	REQ'D	1	TITLE ILLUS, FLYWHEEL/HSG.	
ALL SAW CUT DIMS ± 0.062 in.			SCALE	1/2		
ALL ANGLES ± 1°	SPECS:		SHEET	1 OF 1	PRODUCT 6T-276-41B/1000	21971 C
			AutoCAD R14			

INSTRUMENT PANEL FAULT CODES

ENGINE FAULT

THE ENGINE FAULT TATTLETALE WILL POP OUT AND SHUTDOWN THE BOOSTER FOR THE FOLLOWING REASONS:

1) LOW PUMPER OIL PRESSURE

AIR TEMP FAULT

THE AIR TEMP FAULT TATTLETALE WILL POP OUT AND SHUTDOWN THE BOOSTER FOR THE FOLLOWING REASONS:

1) HIGH SUCTION AIR TEMPERATURE
2) HIGH 1ST STAGE AIR TEMPERATURE
3) HIGH DISCHARGE AIR TEMPERATURE

THE LIQUID LEVEL FAULT TATTLETALE WILL POP OUT AND SHUTDOWN THE BOOSTER FOR THE FOLLOWING REASONS:

1) HIGH LIQUID LEVEL IN SCRUBBER TANK

MURPHY POWERVIEW 100

CATERPILLAR ENGINE FAULTS WILL DISPLAY ON THE MURPHY POWERVIEW 100. REFER TO THE CATERPILLAR MANUAL FOR MORE INFORMATION.

PV-02124N
Revised 09-03
Section 78
00-02-0528

POWERVIEW

Installation and Operations Manual

Please read the following information before installing. A visual inspection of this product for damage during shipping is recommended before mounting. It is your responsibility to have a qualified person install this unit.

GENERAL INFORMATION

WARNING

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT

- ✔ **Disconnect all electrical power to the machine.**
- ✔ **Make sure the machine cannot operate during installation.**
- ✔ **Follow all safety warnings of the machine manufacturer.**
- ✔ **Read and follow all installation instructions.**



Description

The PowerView is a powerful new display in a line of components manufactured by FWMurphy as part of its J1939 MurphyLink™† Family. The J1939 MurphyLink™ Family of products have been developed to meet the needs for instrumentation and control on electronically controlled engines communicating using the SAE J1939 Controller Area Network (CAN).

The PowerView System is comprised of the PowerView and the Mlink™ PowerView Gages. The PowerView is a multifunction tool that enables equipment operators to view many different engine or transmission parameters and service codes. The system provides a window into modern electronic engines and transmissions. The PowerView includes a graphical backlit LCD screen. It has excellent contrast and viewing from all angles. Back lighting can be controlled via menu or external dimmer potentiometer. The display can show either a single parameter or a quadrant display showing 4 parameters simultaneously. Diagnostic capabilities include fault codes with text translation for the most common fault conditions.

The PowerView has four buttons using self-calibrating charge transfer activation technology, which eliminates the concern for pushbutton wear and failure. In addition operators can navigate the display with ease. Enhanced alarm indication with ultra bright alarm and shutdown LEDs (amber & red). It has a wide operating temperature range of -40 to +85º C (-40 to185º F), display viewing -40 to +75º C (-40 to 167º F), and increased environmental sealing to +/- 5 PSI (± 34kPa). In addition it features Deutsch DT style connectors molded into the case and fits quickly and easily into existing 2-1/16 in. (52 mm) gage opening with little effort.

Other components in the system are microprocessor-based Mlink™ PowerView Gages for displaying critical engine data broadcast by an electronic engine or transmission's Engine Control Unit (ECU): engine RPM, oil pressure, coolant temperature, system voltage, etc. and a combination audible alarm and relay unit for warning and shutdown annunciation. Up to 32 components may be linked to the PowerView using a simple daisy chain wire connection scheme using RS485. The PowerView and all connected components can be powered by 12 or 24-volt systems.

Display Parameters

The following are some of the engine and transmission parameters displayed by the PowerView in English or Metric units (when applicable, consult engine or transmission manufacturer for SAE J939 supported parameters):

- ❖ Engine RPM
- ❖ Engine Hours
- ❖ Machine Hours
- ❖ System Voltage
- ❖ % Engine Load at the current RPM
- ❖ Coolant Temperature
- ❖ Oil Pressure
- ❖ Fuel Economy
- ❖ Throttle Position
- ❖ Engine Manifold Air Temperature
- ❖ Current Fuel Consumption
- ❖ Transmission Gear Oil Pressure
- ❖ Transmission Gear Oil Temperature
- ❖ Transmission Gear Position
- ❖ Active Service Codes
- ❖ Stored Service Codes from the engine
- ❖ Set Units for display (English or Metric)
- ❖ Engine Configuration Parameters

Warranty

A two-year warranty on materials and workmanship is given with this FWMurphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.com/warranty.asp.

Table of Contents

General Information *page #*

General Information *(continued)*

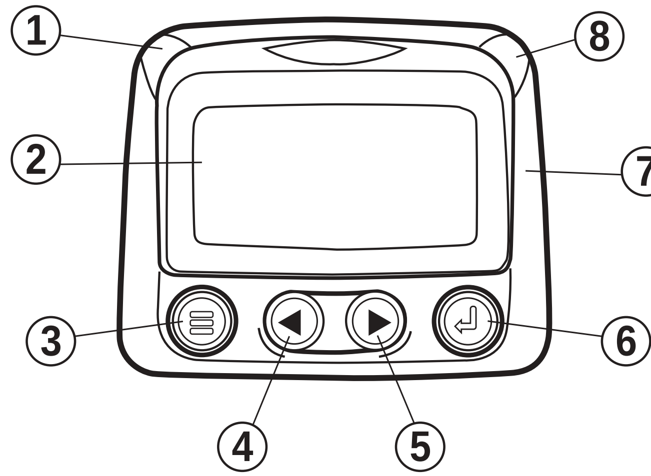
Mechanical Installation

Electrical Installation

Operations

Key Pad Functions

1. Amber Warning LED
2. Display
3. Menu Key
4. Left Arrow Key
5. Right Arrow Key
6. Enter Key
7. Bezel
8. Red Shutdown/Derate LED

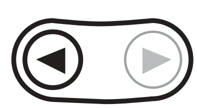


Keypad Functions

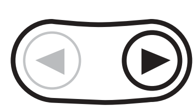
The keypad on the PowerView is a capacitive touch sensing system. There are no mechanical switches to wear or stick, and the technology has been time proven in many applications. It operates in extreme temperatures, with gloves, through ice, snow, mud, grease, etc., and it allows complete sealing of the front of the PowerView. The 'key is pressed' feedback is provided by flashing the screen. The keys on the keypad perform the following functions:



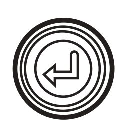
– ***Menu Key*** - The Menu Key is pressed to either enter or exit the menu screens.



– ***Left Arrow*** - The Left Arrow Key is pressed to scroll through the screen either moving the parameter selection toward the left or downward.



– ***Right Arrow*** - The Right Arrow Key is pressed to scroll through the screen either moving the parameter selection toward the right or upward.



– ***Enter Key*** - The Enter Key (also known as Enter Button) is pressed to select the parameter that is highlighted on the screen.

Specifications

Display: 1.3 x 2.6 in. (33 x 66 mm), 64 x 128 pixels.

Operating Voltage: 8 VDC minimum to 32 VDC max.

Reversed Polarity: Withstands reversed battery terminal polarity indefinitely within operating temperatures.

Operating Temperature: -40 to +85ºC (-40 to185ºF).

Display Viewing Temperature: -40 to +75ºC (-40 to 167ºF).

Storage Temperature: -40 to +85ºC (-40 to185ºF).

Environmental Sealing: IP68, +/- 5 PSI (+/- 34.4 kPa).

Power Supply Operating Current: (@ 14 VDC)= 52 mA minimum; 268 mA maximum (LCD heater on).

CAN BUS: SAE J1939 Compliant.

Case: Polycarbonate / Polyester.

Clamp: Polyester (PBT).

Connectors: 6-Pin Deutsch DTO6 Series.

Maximum Panel Thickness: 3/8 in. (9.6 mm).

Mounting Hole: 2.062 inch (52 mm) in diameter.

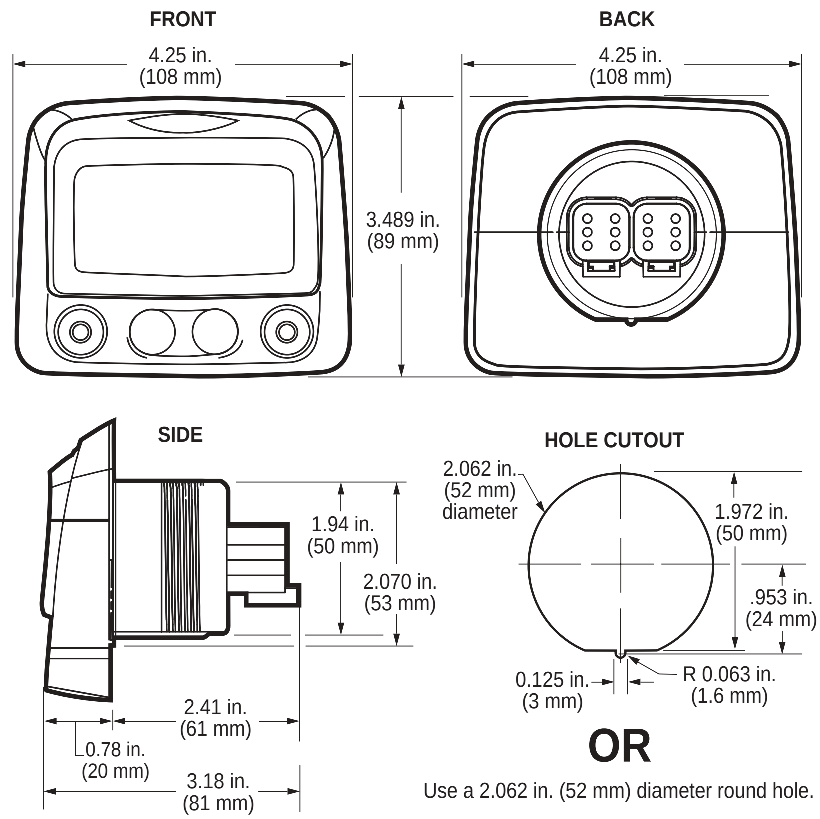
Auxiliary Communications (Gages):
One (1) RS485 port, MODBUS RTU master, 38.4K baud, N, 8, 1 or 2, half duplex.

Potentiometer Input: 1K ohm, 1/4 W

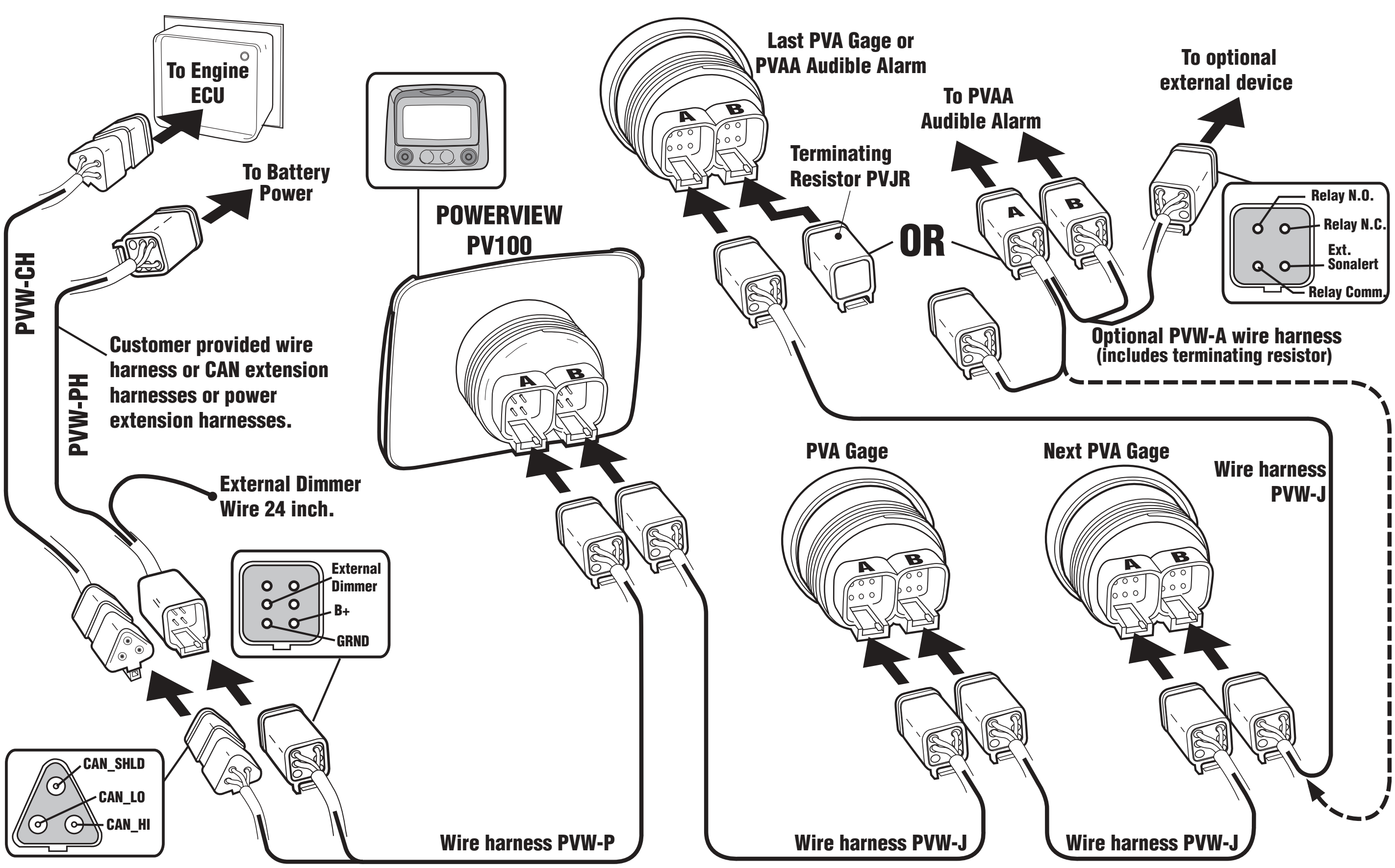
Shipping Weights (all models): 1 lb. (450 g.)

Shipping Dimensions (all models): 6 x 6 x 6 in. (152 x 152 x 152 mm).

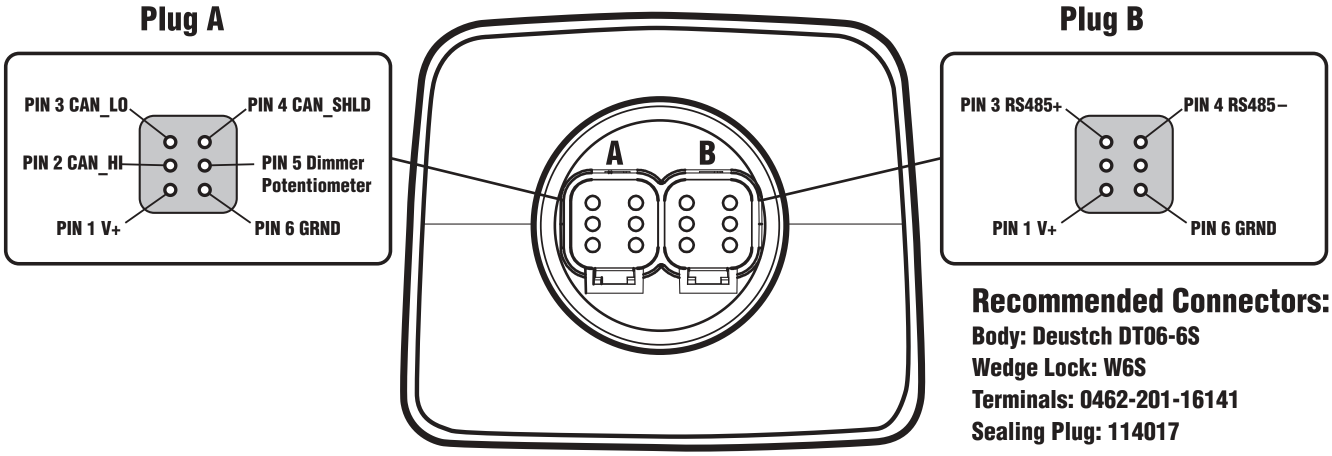
Typical Mounting Dimensions



Typical Quick-Connect Diagram



PowerView Unit Back View
Deutsch DT06-6S Style Connections



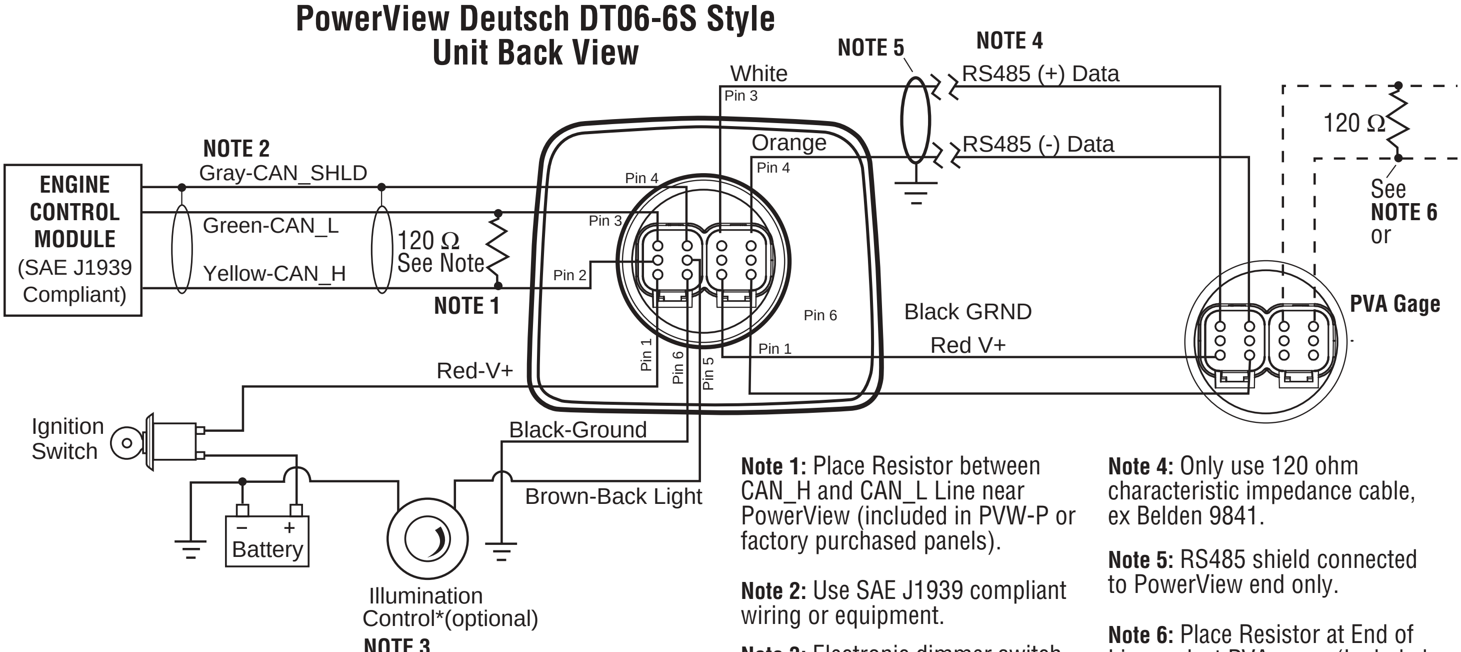
Recommended Connectors:

Body: Deustch DT06-6S
Wedge Lock: W6S
Terminals: 0462-201-16141
Sealing Plug: 114017

Typical Wiring Diagram

IMPORTANT: To eliminate external interference: RS485(+) and RS485(-) should be twisted pair cable or twist wires together, one twist per inch minimum. CAN_L, CAN_H and CAN Shield should be approved J1939 CAN bus cable (CAN wire for example: RADOX plug and play cable, from Champlain cable). (RS485 wire for example: BELDEN 9841 or 3105A).

PowerView Deutsch DT06-6S Style Unit Back View



Note 1: Place Resistor between CAN_H and CAN_L Line near PowerView (included in PVW-P or factory purchased panels).

Note 2: Use SAE J1939 compliant wiring or equipment.

Note 3: Electronic dimmer switch recommended with 4A, capacity or heavy duty rheostat switch, 1000 ohm, 0.25 watt.

Note 4: Only use 120 ohm characteristic impedance cable, ex Belden 9841.

Note 5: RS485 shield connected to PowerView end only.

Note 6: Place Resistor at End of Line on last PVA gage. (Included for factory purchased panels.)

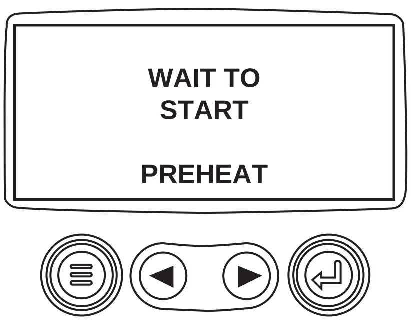
PowerView Menus

First Time Start Up

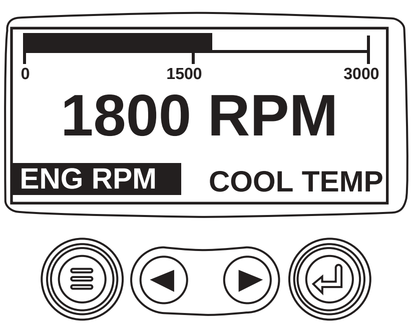
1. When power is first applied to the PowerView, the "Logo Screen" will be displayed.



2. The "Wait to Start" message will be displayed for engines with a pre-startup sequence. Once the "Wait to Start" message is no longer displayed the operator may start the engine. Note: Displays only when SAE J1939 message is supported by engine manufacturer.

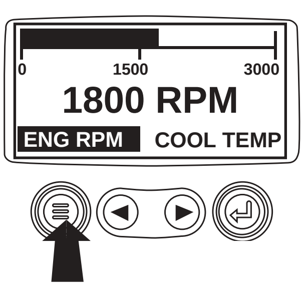


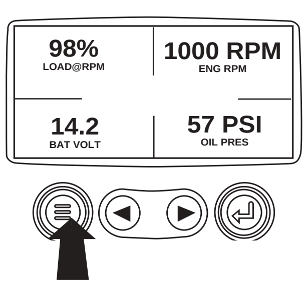
3. Once the engine has started the display will show the single engine parameter display.



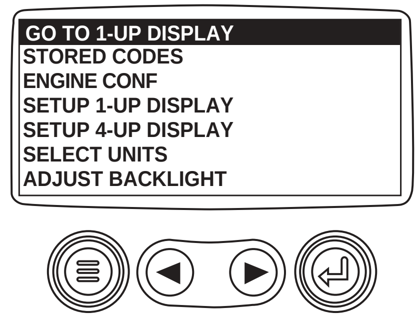
Main Menu Navigation

1. Starting at the single or four engine parameter display, depress the "Menu Button".

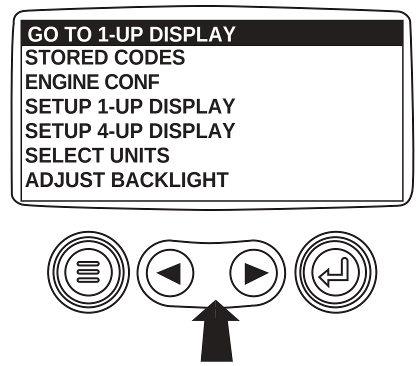




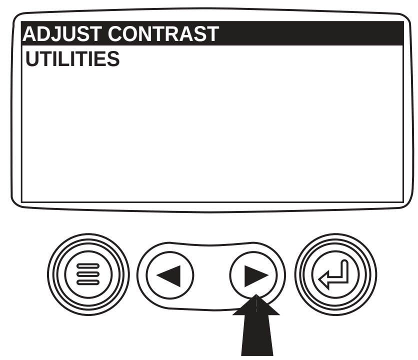
2. The first seven items of the “Main Menu” will be displayed.



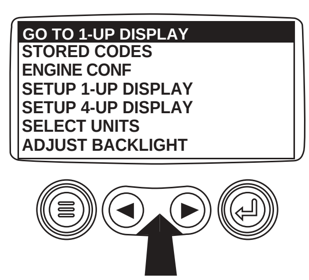
3. Depressing the "Arrow Buttons" will scroll through the menu selections.

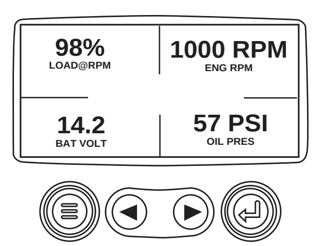


4. Pressing the right arrow button will scroll down to reveal the last items of “Main Menu” screen highlighting the next item down.



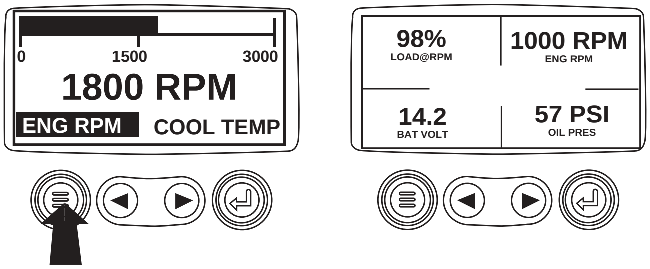
5. Use the arrow buttons to scroll to the desired menu item or press the "Menu Button" to exit the Main menu and return to the engine parameter display.



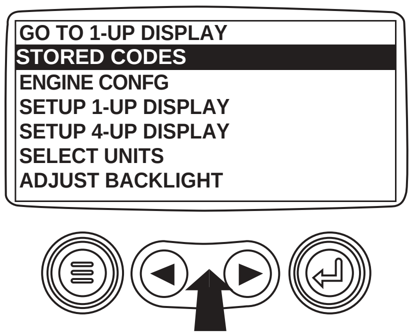


Stored Fault Codes

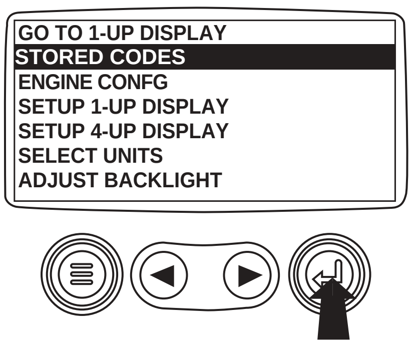
1. Starting at the single or four engine parameter display depress the "Menu Button".



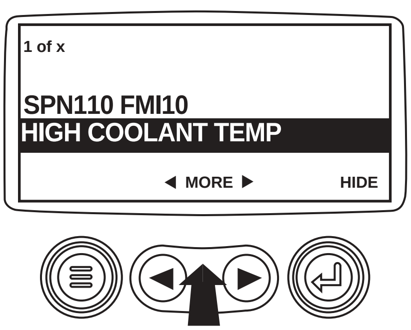
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Stored Fault Codes" is highlighted.



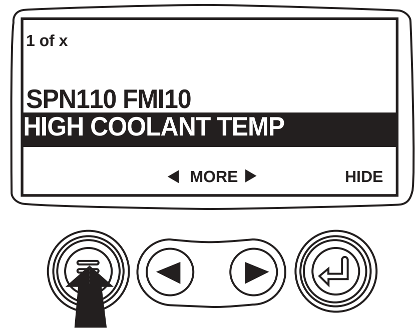
3. Once the "Stored Fault Codes" menu item has been highlighted press the "Enter Button" to view the "Stored Fault Codes".



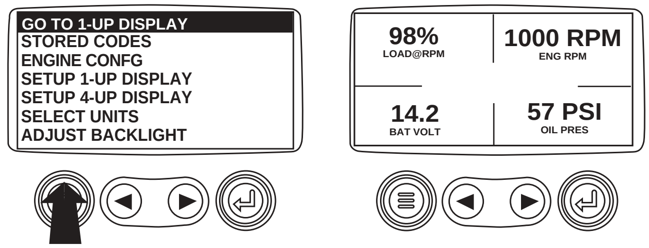
4. If the word "MORE" appears above the "Arrow Buttons" there are more stored fault codes that may be viewed. Use the "Arrow Buttons" to scroll to the next Stored Diagnostic Code.



5. Press the "Menu Button" to return to the main menu.

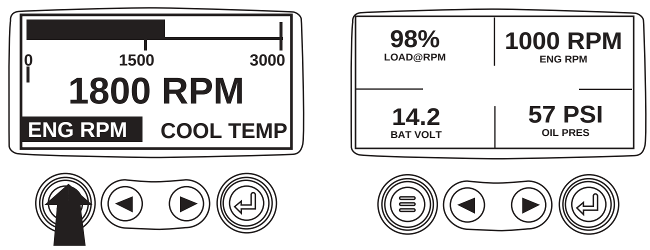


6. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.

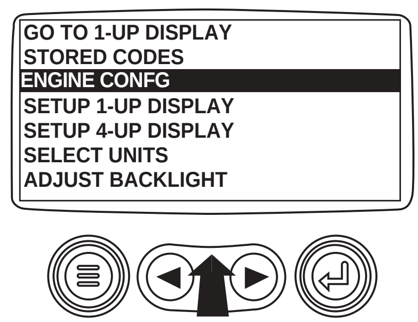


Engine Configuration Data

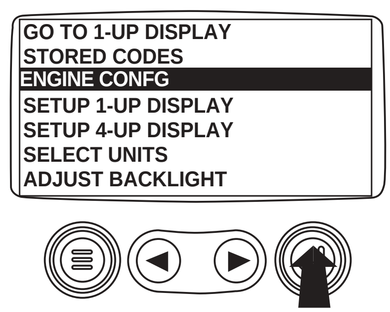
1. Starting at the single or four engine parameter display press the "Menu Button".



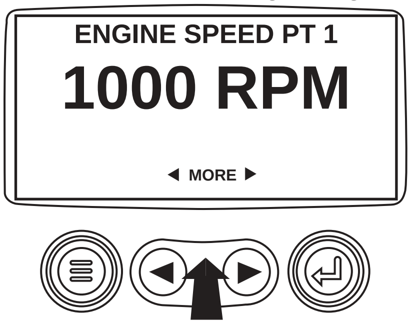
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Engine Configuration" is highlighted.



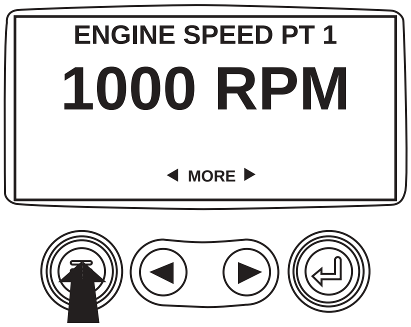
3. Once the "Engine Configuration" menu item has been highlighted press the "Enter Button" to view the engine configuration data.



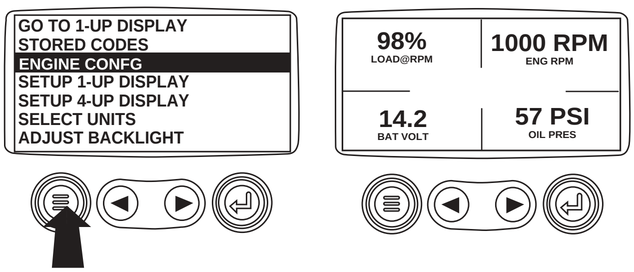
4. Use the "Arrow Buttons" to scroll through the engine configuration data.



5. Press the "Menu Button" to return to the main menu.



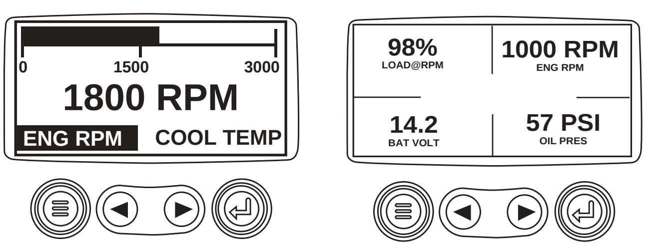
6. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.



Faults and Warnings

Auxiliary Gage Fault

1. During normal operation the single or four parameter screen will be displayed.



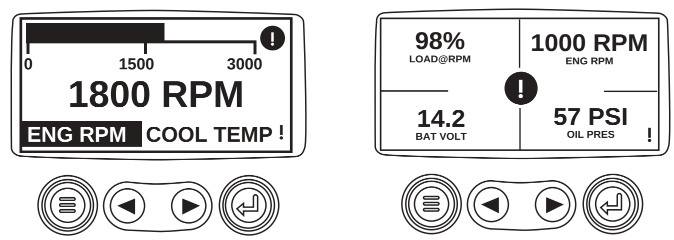
2. The PVA Series of auxiliary gages can be attached to the PowerView. These auxiliary gages communicate with the Modbus master PowerView via a daisy-chained RS-485 port. If at any time during system initialization or normal operation an auxiliary gage should fail the single or four parameter screen will be replaced with the "MLink Gage Fault" message.



3. To acknowledge and "Hide" the fault and return to the single or four parameter display press the "Enter Button".



4. The display will return to the single or four parameter screen.



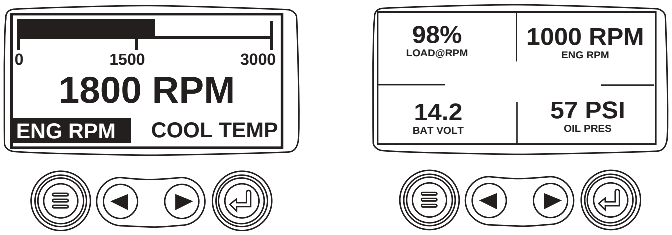
- Indicates Auxiliary Gage Fault
- Indicates Fault Warning
- Indicates Derate or Shutdown Condition Fault

5. Pressing the "Enter Button" will redisplay the hidden fault. Pressing the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display. NOTE: The fault can only be cleared by correcting the cause of the fault condition.

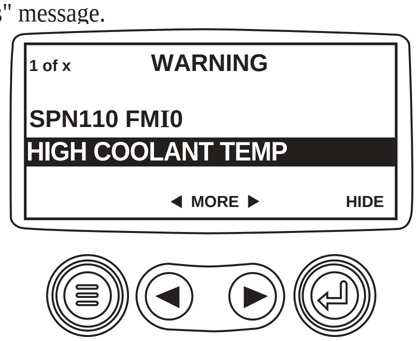


Active Fault Codes

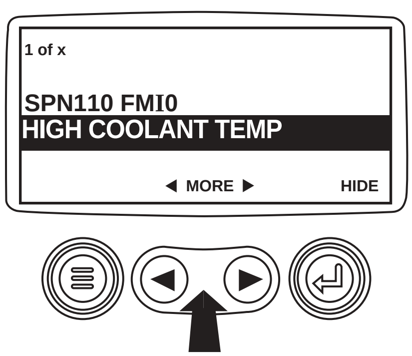
1. During normal operation the single or four parameter screen will be displayed.



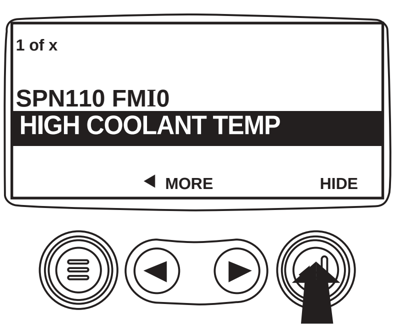
2. When the PowerView receives a fault code from an engine control unit the single or four parameter screen will be replaced with the "Active Fault Codes" message.



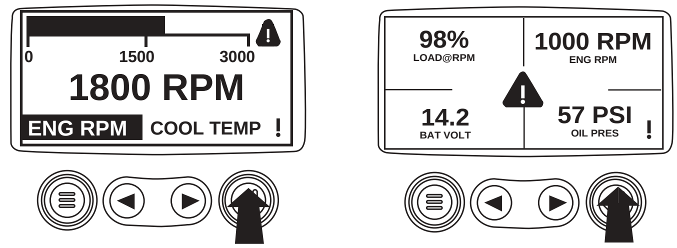
3. If the word "MORE" appears above the "Arrow Buttons" there are more active fault codes that may be viewed.
Use the "Arrow Buttons" to scroll to the next "Active Fault Code"



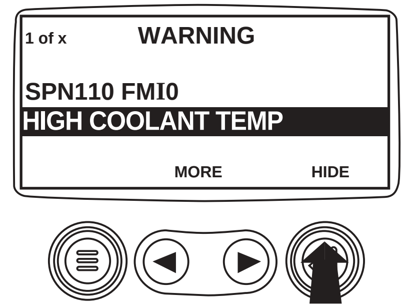
4. To acknowledge and "Hide" the fault and return to the single or four parameter display press the "Enter Button".



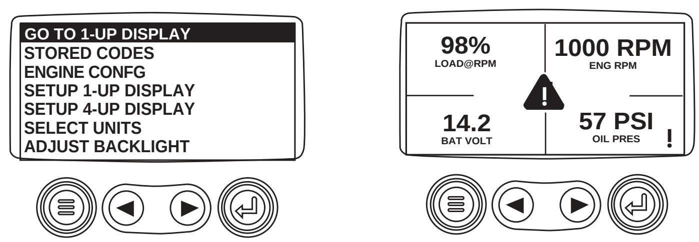
5. The display will return to the single or four parameter display, but the display will contain the "Active Fault"warning icon. Pressing the "Enter Button" will redisplay the hidden fault.



6. Pressing the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display.

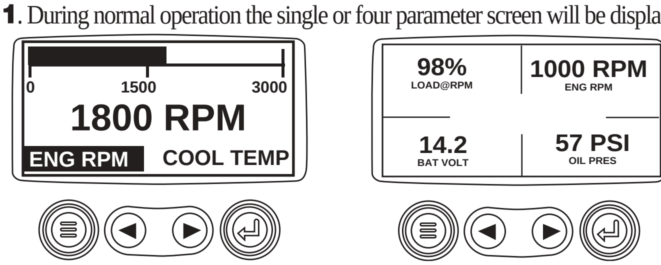


7. The Single or Four parameter screen will display the fault icon until the fault condition is corrected. NOTE: Ignoring active fault codes could result in severe engine damage.

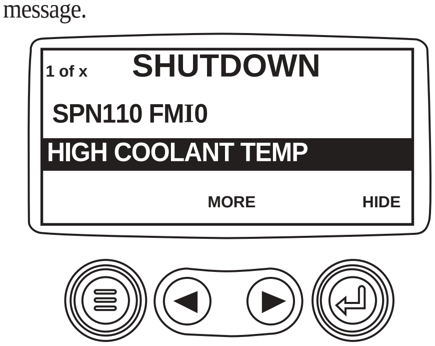


Shutdown Codes

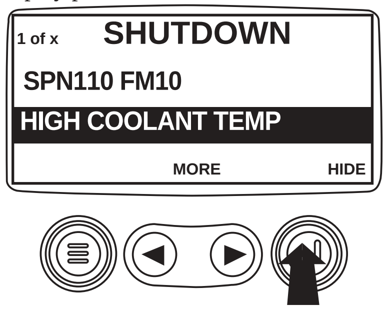
1. During normal operation the single or four parameter screen will be displayed.



2. When the PowerView receives a severe fault code from an engine control unit the single or four parameter screen will be replaced with the "Shutdown!" message.

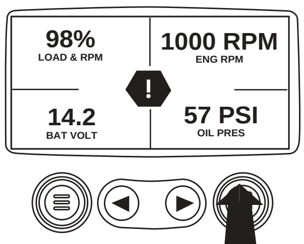


3. To acknowledge and "Hide" the fault and return to the single or four parameter display press the "Enter Button".

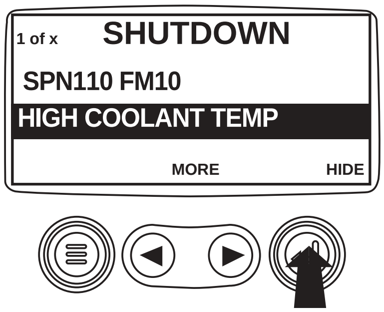


4. The display will return to the single or four parameter display, but the display will contain the "Shut Down" icon. Pressing the "Enter Button" will redisplay the hidden fault.

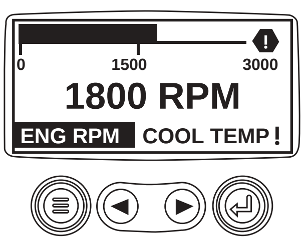


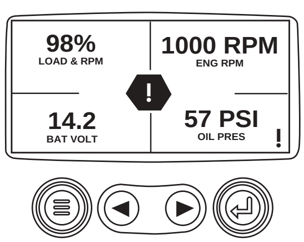


5. Pressing the "Enter Button" once again will hide the fault and return the screen to the single or four parameter display.



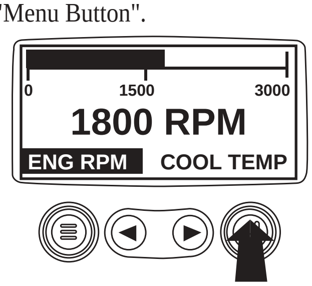
6. The Single or Four parameter screen will display the fault icon until the fault condition is corrected. NOTE: Ignoring active fault codes could result in severe engine damage.

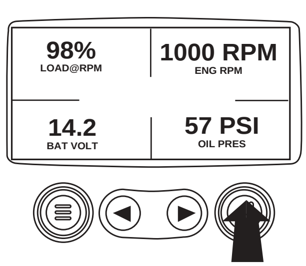




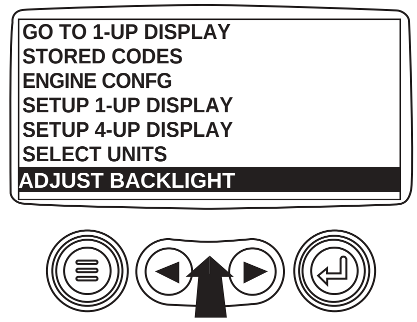
Back Light Adjustment

1. Starting at the single or four engine parameter display press the "Menu Button".

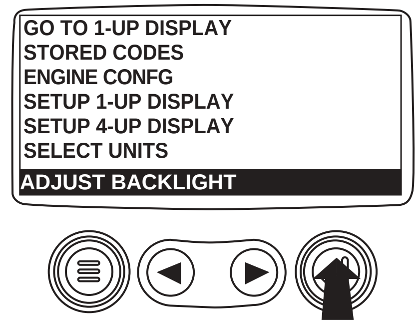




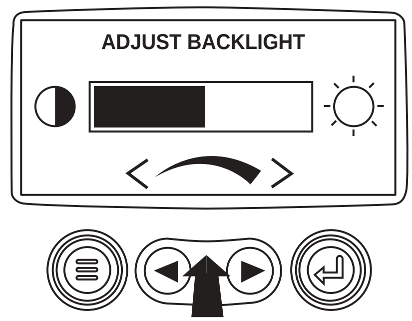
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Adjust Backlight" is highlighted.



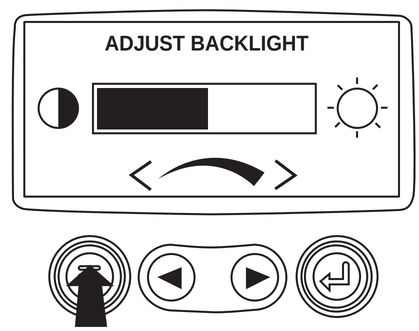
3. Once the "Adjust Backlight" menu item has been highlighted press the "Enter Button" to activate the "Adjust Backlight" function.



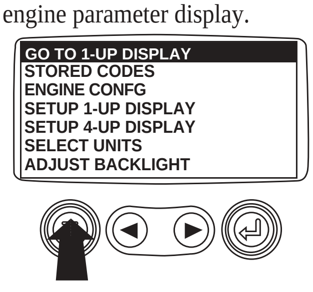
4. Use the "Arrow Buttons" to select the desired backlight intensity.

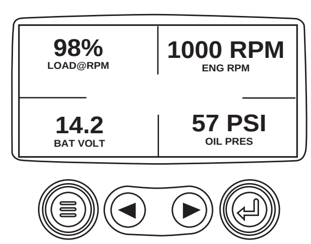


5. Press the "Menu Button" to return to the main menu.



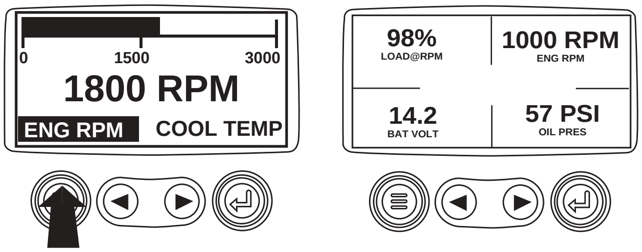
6. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.



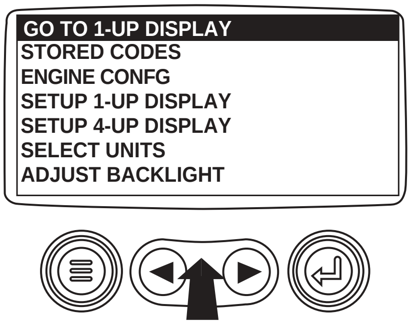


Contrast Adjustment

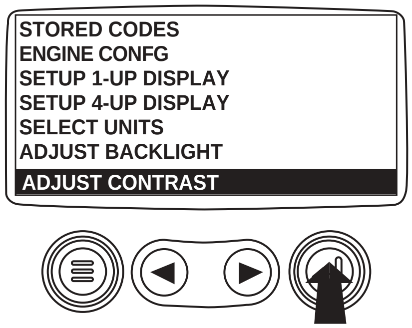
1. Starting at the single or four engine parameter display depress the "Menu Button".



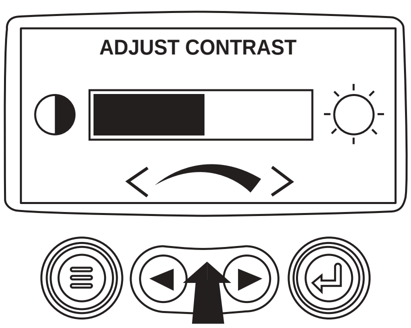
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until "Adjust Contrast" is highlighted.



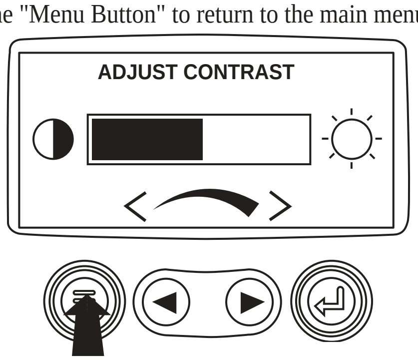
3. Once the "Adjust Contrast" menu item has been highlighted press the "Enter Button" to activate the "Adjust Contrast" function.



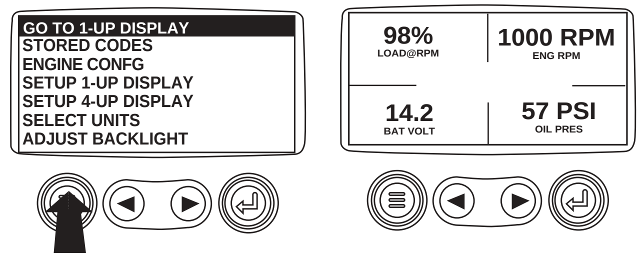
4. Use the "Arrow Buttons" to select the desired contrast intensity.



5. Press the "Menu Button" to return to the main menu.

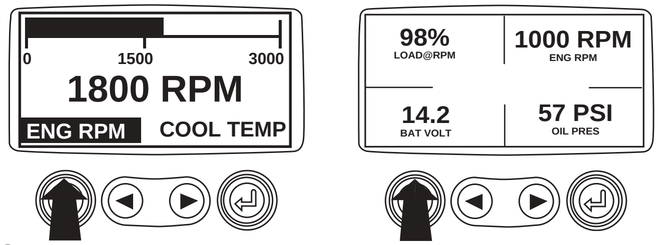


6. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.

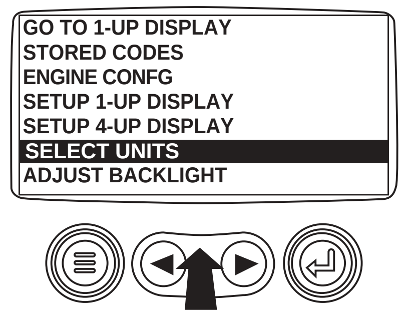


Select Units

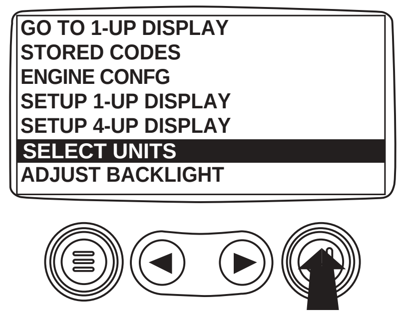
1. Starting at the single or four engine parameter display depress the "Menu Button".



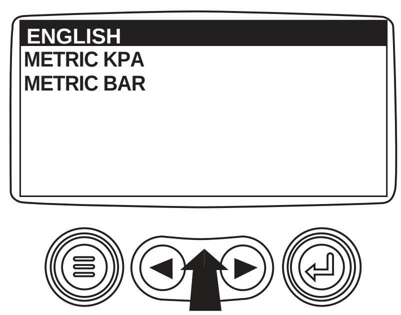
2. The main menu will pop up on the display. Use the arrow buttons to scroll through the menu until the "Select Units" is highlighted.



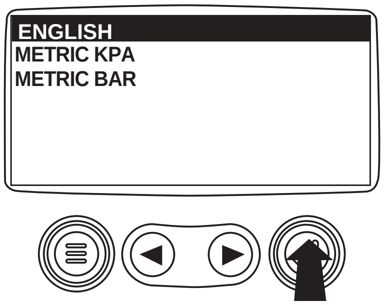
3. Once the "Select Units" menu item has been highlighted press the "Enter Button" to access the "Select Units" function.



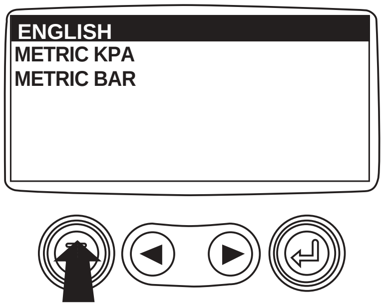
4. Use the arrows to highlight the desired units. "English" for Imperial units i.e. PSI, ºF or Metric kPa, Metric Bar for IS units i.e. kPa, Bar, ºC.



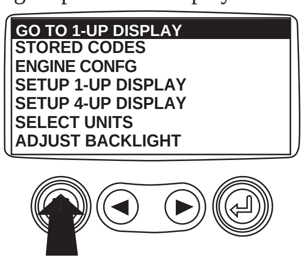
5. Press the "Enter Button" to select the highlighted units.

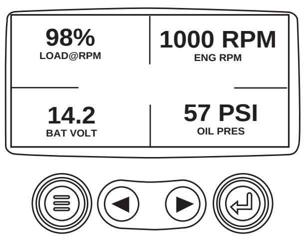


6. Press the "Menu Button" to return to the "Main Menu".



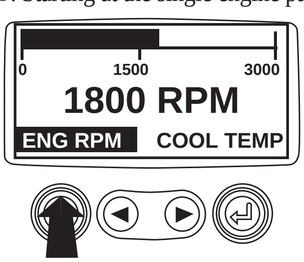
7. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.

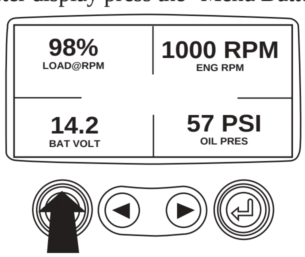




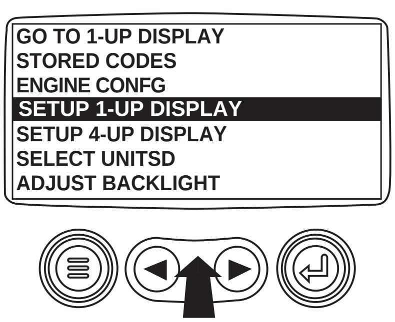
Setup 1-Up Display

1. Starting at the single engine parameter display press the "Menu Button".

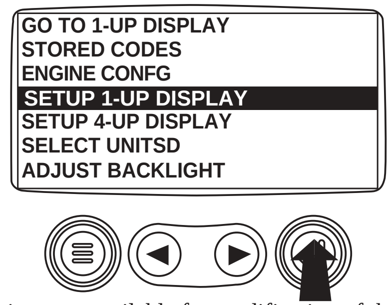




2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Setup 1-up Display" is highlighted.



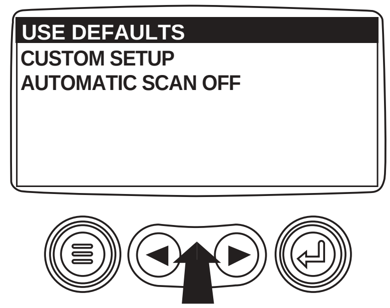
3. Once the "Setup 1-up Display" menu item has been highlighted press the "Enter Button" to access the "Setup 1-up Display" function.



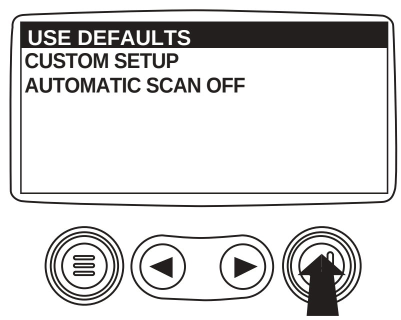
4. Three options are available for modification of the 1-Up display.

- **a)**. **Use Defaults** – This option contains a set of engine parameters: Engine Hours, Engine RPM, System Voltage, Battery Voltage, % Engine Load at Current RPM, Coolant Temperature, Oil Pressure.
- **b)**. **Custom Setup** – This option allows for the modification of what parameter, the number of parameters, and the order in which the parameters are being displayed.
- **c)**. **Automatic Scan** – Selecting the scan function will cause the 1-Up Display to scroll through the selected set of parameters one at a time, momentarily pausing at each.

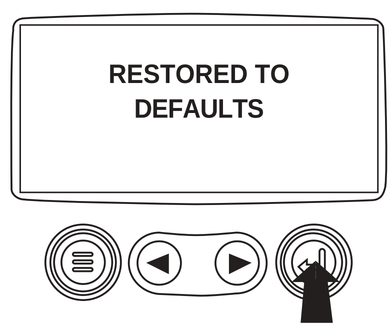
5. **Use Defaults** - To select "Use Defaults" use the arrow buttons to scroll to and highlight "Use Defaults" in the menu display.



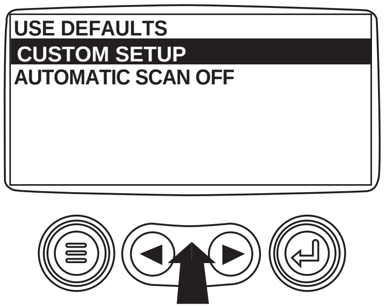
6. Press the "Enter Button" to activate the "Use Defaults" function.



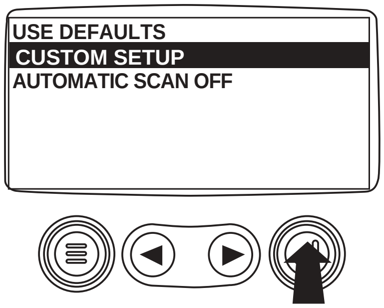
7. A message indicating the “Single Engine” parameter display parameters are reset to the factory defaults will be displayed, then the display will return to the “Custom Setup” menu.



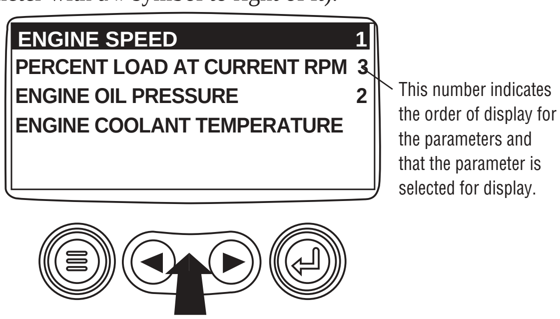
8. Custom Setup - To perform a custom setup of the 1-Up Display use the arrow buttons to scroll to and highlight "Custom Setup" on the display.



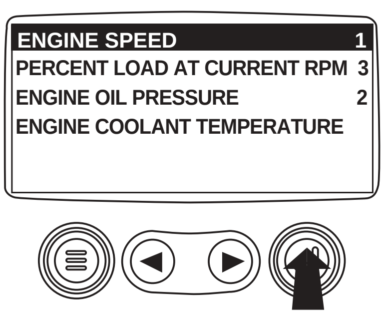
9. Pressing the "Enter Button" will display a list of engine parameters.



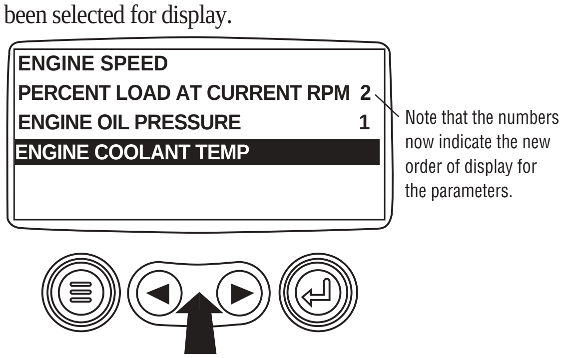
10. Use the "Arrow Buttons" to scroll to and highlight a selected parameter (parameter with a # symbol to right of it).



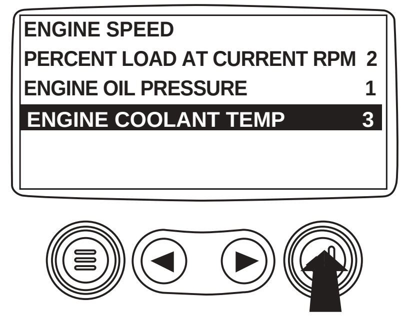
11. Press the "Enter Button" to diselect the selected parameter removing it from the list of parameters being displayed on the 1-up display.



12. Use the "Arrow Buttons" to scroll and highlight the desired parameter that has not been selected for display.

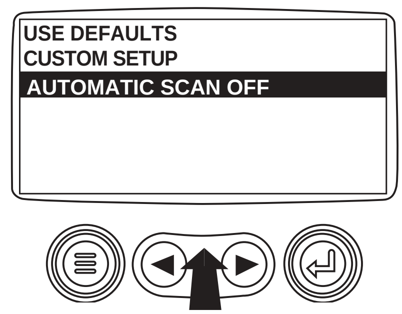


13. Press the "Enter button" to select the highlighted parameter for inclusion in the Single Engine Parameter Display.

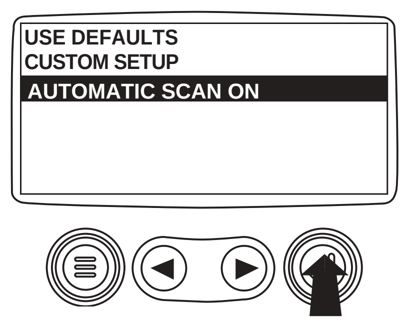


14. Continue to scroll and select additional parameters for the custom 1-Up Display. Press the "Menu button" at any time to return to the "Custom Setup" menu.

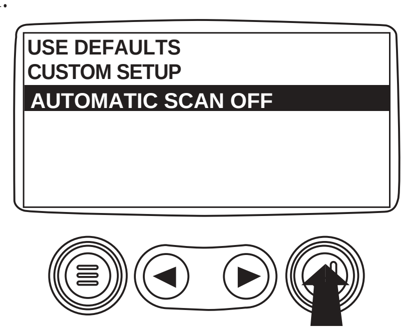
15. Automatic Scan - Selecting the scan function will cause the 1-Up Display to scroll through the selected set of parameters one at a time. Use the "Arrow Buttons" to scroll to the "Automatic Scan" function.



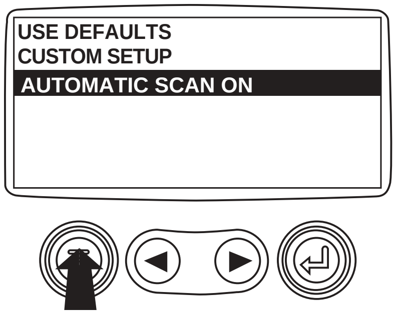
16. Pressing the "Enter Button" toggles the "Automatic Scan" function on.



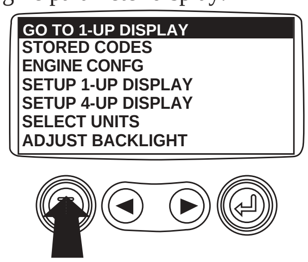
17. Pressing the "Enter Button" again toggles the "Automatic Scan" function off.

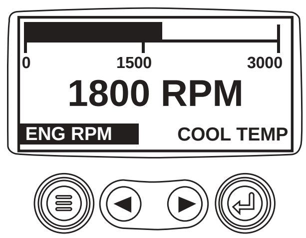


18. Once the "Use Defaults", "Custom Setup" and "Automatic Scan" functions have been set press the "Menu Button" to return to the main menu.



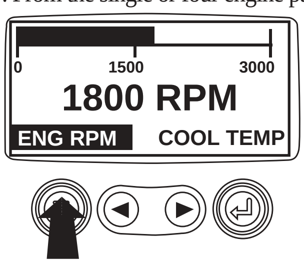
19. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.

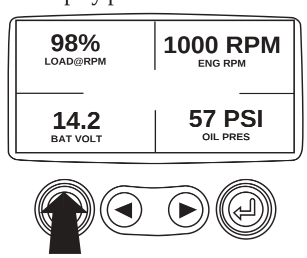




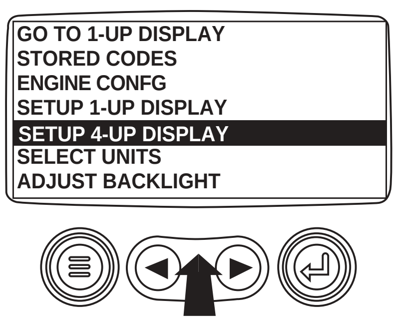
Setup 4-Up Display

1. From the single or four engine parameter display press the "Menu Button".

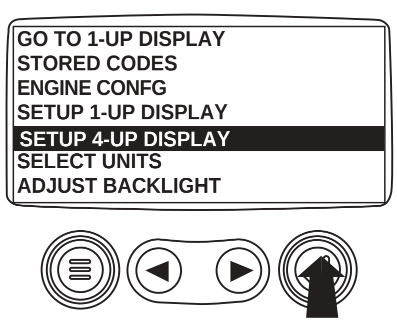




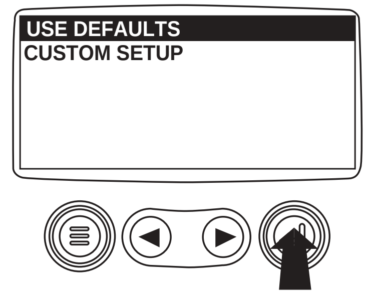
2. The main menu will pop up on the display. Use the "Arrow Buttons" to scroll through the menu until the "Setup 4-Up Display" is highlighted.



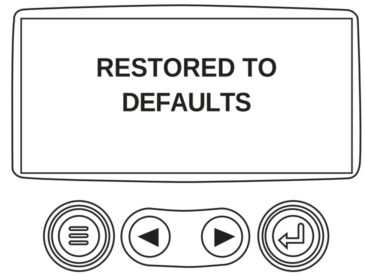
3. Once the "Setup 4-Up Display" menu item has been highlighted press the "Enter Button" to activate the "Setup 4-Up Display" menu.



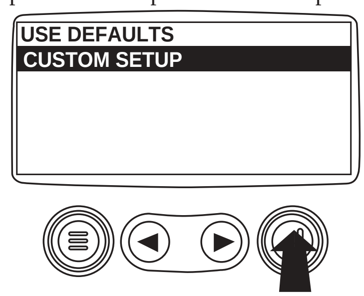
4. Press the "Enter Button" to activate the "Use Defaults" function. This action will reset the unit to the factory default.



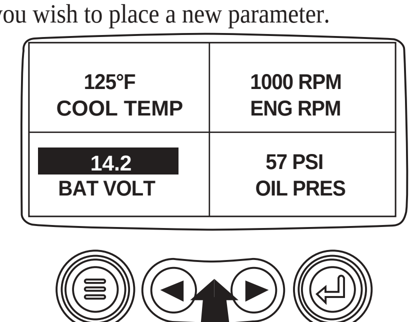
5. The "Use Defaults"screen will be displayed during the reseting period then will automatically return to the "Setup 4-Up Display" menu.



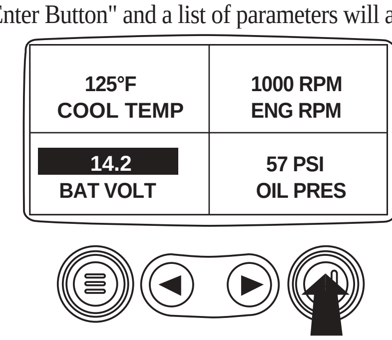
6. Select the "4-Up Custom Setup" from the "4-Up Setup" menu.



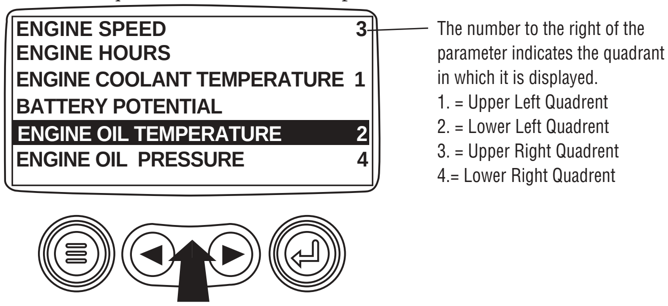
7. The quadrent with the backlit parameter value is the current selected parameter. Use the "Arrow Buttons" to highlight the parameter value in the quadrant you wish to place a new parameter.



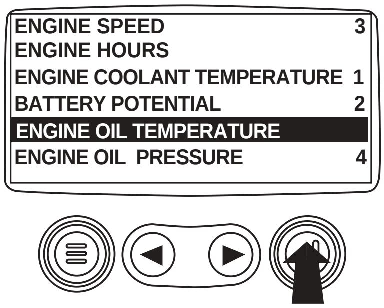
8. Press the "Enter Button" and a list of parameters will appear.



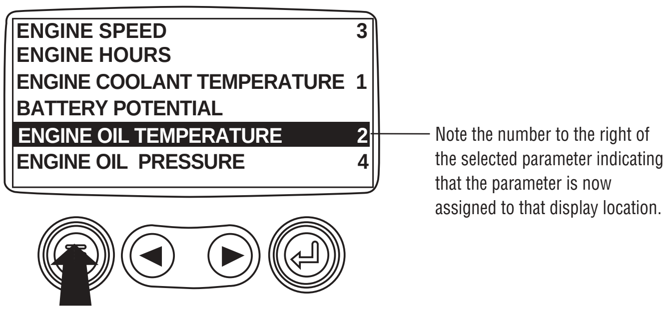
9. The parameter that is highlighted is the selected parameter for the screen. Use the "Arrow Buttons" to highlight the new parameter to be placed in the quadrent selected in the previous screen.



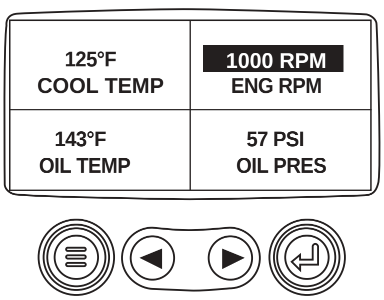
10. Press the "Enter Button" to change the selected parameter in the quadrant to the new parameter.



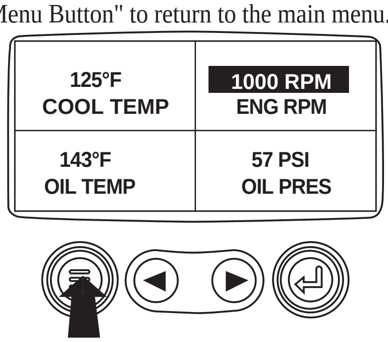
11. Use the "Menu Button" to return to the “4-UP Custom Setup” screen.



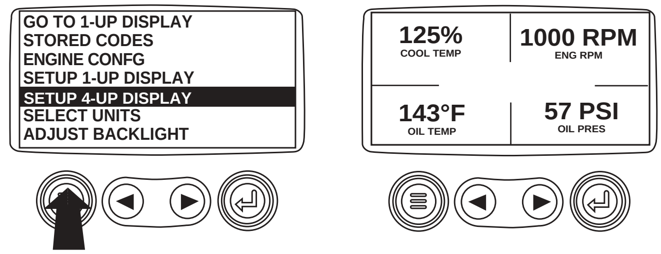
12. The parameter in the selected quadrent has changed to the parameter selected in the previous screen.



13. Repeat the parameter selection process until all spaces are filled.
14. Press the "Menu Button" to return to the main menu.

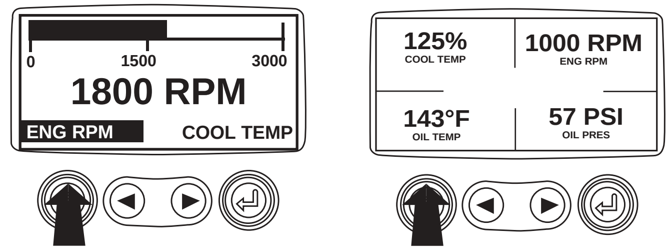


15. Press the "Menu Button" to exit the Main menu and return to the engine parameter display.

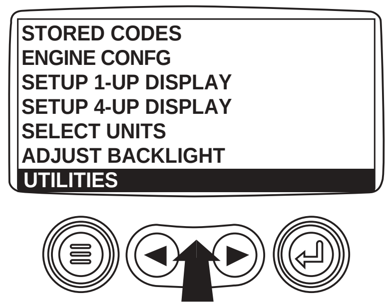


Utilities *(Information and troubleshooting)*

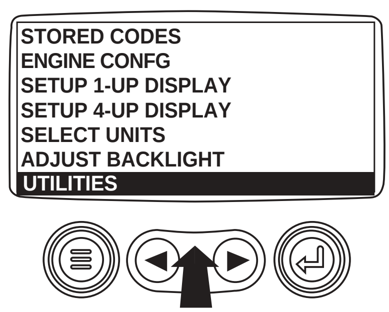
1. Starting at the single or four engine parameter display, press the “Menu button”.



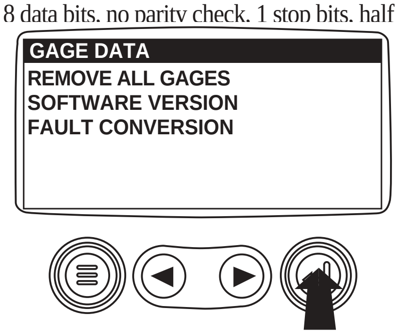
2. The main menu will be displayed. Use the “Arrow buttons” to scroll through the menu until the “Utilities” is highlighted.



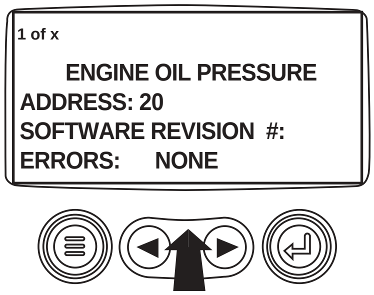
3. Once the “Utilities” menu item has been highlighted, press the “Enter Button” to activate the “Utilities” functions.



4. Press "Select" to enter the “Gages Data” display. When “Gage Data” is selected the PowerView will communicate with the analog gages at a fixed rate of 38.4 k Baud, 8 data bits, no parity check, 1 stop bits, half duplex.



5. Use the “Arrow buttons” to scroll through the items or press “Menu” to return to the “Utilities” menu.



6. Press “Menu Button” to return to the “Utilities” menu.



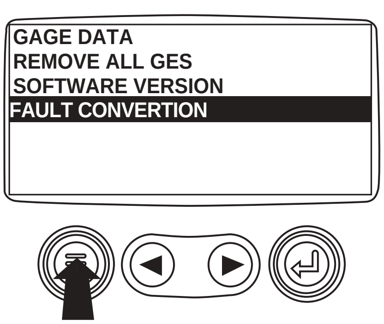
7. Use the “Arrows” to highlight “Remove All Gages”. Press “Select” to clear gage data from memory. It takes a moment to clear all gages.



8. When the gage data has cleared, the display automatically returns to the “Utilities” menu. Scroll to “Software Version”. Press “Select” to view the software version currently in the PowerView.



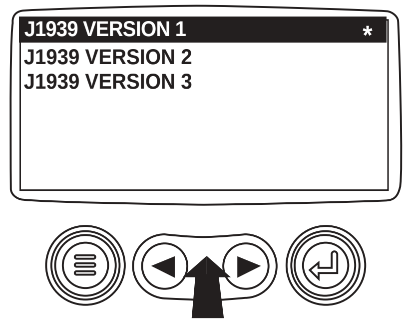
9. Press “Menu” to return to “Utilities”. Highlight “Fault Convertion” using the “Arrows”. Press “Select” to enter the Fault convertion menu.



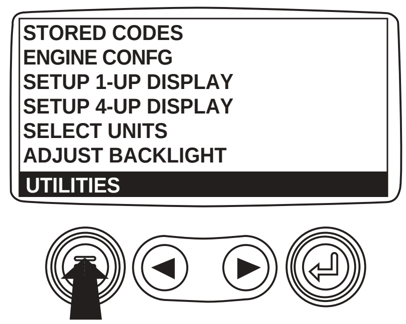
11. Using the “Arrow” buttons scroll to highlight the version to be selected. Press the“Select” button to select the version. Note that an asterisks appears to the right of the selection.

NOTE: There are four (4) different methods for converting fault codes. The PowerView always looks for J1939 Version 4 and can be set to use one of the three (3) other J1939 versions. Most engine ECU’s use Version 4, therefore in most cases adjustment of this menu option will not be required.

Upon receiving an unrecognizable fault, change to a different J1939 Version. If the fault SPN does not change when the version is changed, the ECU generating the fault is using Fault Conversion method 4. If the SPN number does change but is still unrecognizable, try changing to another J1939 Version not yet used and continue to check the SPN number.



12. Press the “Menu” button to return to “Utilities” menu. Press the “Menu” button again to to return to the “Main” menu.



SAE J1939 MurphyLink System Implementation of J1939 Parameters

Source: SAEJ1939-71 Surface Vehicle Recommended Practice

SAE J1939 Section	Description	PGN	Parameter	Display Value
5.3.6	Elec Eng Cont #2 - EEC2	61443	Accelerator Pedal Position	THROTTLE
			Percent Load at Current RPM	LOAD@RPM
5.3.7	Elec Eng Cont #1 - EEC1	61444	Actual engine % torque	ENG TORQUE
			Engine Speed	ENG RPM
5.3.14	Vehicle Distance	65248	Trip Distance	TRIPSPNEDIST
			Total Vehicle Distance	VEH DIST
5.3.19	Engine hours, Revolutions	65253	Total Engine Hours	ENG HRS
5.3.23	Fuel Consumption	65257	Trip Fuel	TRIP FUEL
			Total Fuel Used	FUELUSED
5.3.28	Engine Temperature	65262	Engine Coolant Temp	COOL TEMP
			Fuel Temperature	FUEL TEMP
			Engine Oil Temperature	OIL TEMP
			Engine Intercooler Temperature	INTC TEMP
5.3.29	Engine Fluid Level/Pressure	65263	Fuel Delivery Pressure	FUEL PRES
			Engine Oil Level	OIL LVL
			Engine Oil Pressure	OIL PRES
			Coolant Pressure	COOL PRES
			Coolant Level	COOL LVL
5.3.31	Cruise Control /Vehicle Speed	65265	Wheel Based Vehicle Speed	VEH SPD
5.3.32	Fuel Economy	65266	Fuel Rate	FUEL RATE
			Instantaneous Fuel Economy	FUEL ECON
			Average Fuel Economy	AVG ECON
5.3.35	Ambient Conditions	65269	Barometric Pressure	BARO PRES
			Air Inlet Temperature	AIR IN TEMP
5.3.36	Inlet/Exhaust Conditions	65270	Boost Pressure	BST PRES
			Intake Manifold Temp	MANI TMP
			Air Filter Differential Pressure	AIRDIFPR
			Exhaust Gas Temperature	EXH TEMP
			Alternator Voltage	ALT VOLT
5.3.37	Vehicle Electrical Power	65271	Electrical Potential (Voltage)	SYS VOLT
			Battery Pot. Voltage (Switched)	BAT VOLT
5.3.8	Electronic Transmission Controller #2	61445	Selected Gear	SELECT GEAR
		61445	Current Gear	CURNT GEAR
5.3.38	Transmission Fluids	65272	Transmission Oil Pressure	TRAN PRES
			Transmission Oil Temperature	TRAN TEMP
5.3.46	Engine Fluid Level/Pressure #2	65243	Injector Metering Rail 1 Pres	INJ PRES1
			Injector Metering Rail 2 Pres	INJ PRES2
5.3.58	Fan Drive	65213		FAN SPD
5.3.111	Auxiliary Pressures & Temperatures	65164	Auxiliary Temperature	AUX TEMP
			Auxiliary Pressure	AUX PRES
		65226	DM1 - Active Diagnostic	SRVCCODE
	Diagnostic Messages	65227	DM2 - Previously Act Diag Codes	STORCODE
		65228	DM3 - Diagnostic Clear	
J1939 N/A	Machine Hours (PowerView Calculated)	N/A	Machine Hours	MACH HRS
5.3.17	Engine Conf.	65251	Engine Configuration	ENG CONF
	Electronic Transmission Controller #1	61442	Output Shaft Speed	OUT SFT SPD
5.3.5	Electronic Transmission Controller #1	61442	Input Shaft Speed	IN SFT SPD
	Electronic Transmission Controller #1	61442	Torque Converter Lockup Engaged	TORQ LOCK

GLOSSARY (Troubleshooting information)

CANBUS FAILURE

PowerView has not received any CAN messages for at least 30 seconds.

NO DATA

PowerView has not received the particular message being displayed for at least 5 seconds.

NOT SUPPORTED

PowerView has received a message from the ECU stating the displayed message is not supperted.

DATA ERROR

PowerView has received an error message from the ECU for the displayed message.

EMPTY

No parameter selected for this 4-UP quadrant.

WAIT TO START PREHEATING

This is a message from the engine indicating it is in a preheating cycle. Wait until this message clears before starting the engine.

TIMEOUT ECU NOT RESPONDING

The ECU did not respond to th PowerView request.

NO GAGE DATA

The PowerView has no record of connected gages to the RS485 bus.

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CONTROL SYSTEMS & SERVICES DIVISION
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www.murphyswitch.com

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Campbellfield, Vic 3061; Australia
+61 3 9358-5555 **fax** +61 3 9358-5558
e-mail murphy@macquarrie.com.au

USA–ISO 9001:2000 FM 28221
UK–ISO 9001:2000 FM 29422

Sealed Piston Switch

Series 9675, A9675

Features

- Double make double break capability
- Extremely long life
- Calibrated dial for easy setpoint adjustment
- Tamper-proof external adjustment
- Oil & dust tight
- Easy setpoint adjustment



Applications

- Hydraulic applications
- Machine tools
- Compressors
- Mining
- Specialty vehicles
- Lubrication equipment
- Metal working

General Specifications*

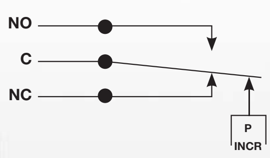
Accuracy:	± 2% of the adjustable range
Switch:	
Type:	Single pole double throw (SPDT) or double make double break (DMDB) snap action; single circuit
Rating:	9675: (one SPDT) 10 amps @ 125, 250, or 480 VAC; 7.5 amps @ 600 VAC; 0.03 amps at 250 VDC A9675: (one DMDB) 15 amps @ 125, 250, or 480 VAC; 7.5 amps @ 600 VAC; 0.03 amps at 250 VDC
Wetted Parts:	
Process Fitting:	416 stainless steel
O-ring:	Buna-N with Teflon® backup ring
Piston:	416 stainless steel
Enclosure:	Anodized aluminum
Electrical Connection:	Through 1/2” NPT conduit connection to screw terminals
Enclosure Ratings:	NEMA 13
Pressure Connection:	1/4” NPT female
Approvals:	
PED (European) :	Compliant to PED 97/23/EC
Temperature Range:	
Operating:	-20° to +165°F (-29° to +74°C)
Storage:	-40° to +200°F (-40° to +93°C)

* See Order Number Key for additional options.

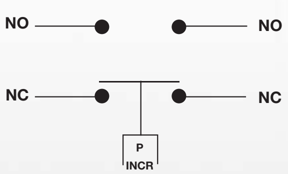
Adjustment Instructions:	
Setpoint:	Loosen adjustment screw cover and open. Using a 5/16” allen wrench, turn adjustment screw clockwise to increase setpoint, counterclockwise to decrease setpoint. The setpoint indicator (located inside enclosure) provides a visual indication of the approximate setpoint. Optional adjustable differential models remove front cover and locate adjustment screw (identified) using screwdrivers, rotate screw clockwise to increase differential.
Wiring Code:	
SPDT:	Normally Open (NO), Normally Closed (NC), and Common (C) terminals are identified on the limit switches
DMDB:	Two normally open (NO) and two normally closed.
Options:	-Factory pre-set -Cleaned for oxygen service -Adjustable deadband -Drain port, 1/8” NPT
Shipping Weight:	1.75 lbs. approximate

Wiring Diagram

SPDT

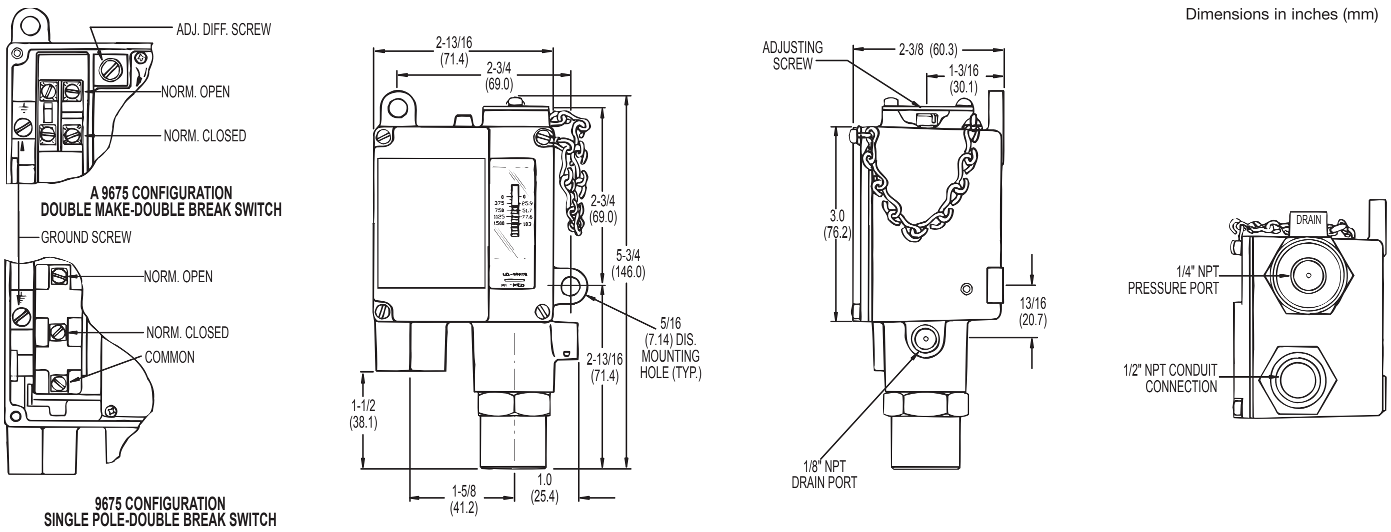


DMDB



Technical Drawing

Dimensions in inches (mm)



Order Number Key / Options

Example	D	9675	-2		-V

D	Drain port 1/8" NPT

Base Model

9675	Base part number (with SPDT limit switch)
A9675	Base part number (with DMDB limit switch)

Options

-E	EPR O-ring
-N	Neoprene O-ring
-V	Viton® O-ring
-Z1	Cleaned for oxygen service
Sxxx	Factory pre-set (consult factory)

Deadband

Blank	Standard
AA[1]	Adjustable deadband (only available with A9675 model)

Pressure Range

For base model: 9675

	Adjustable Range				Approx. Deadband	Proof
	Decreasing - psi (bar)		Increasing - psi (bar)		(Actuation Value)	Pressure
	Min	Max	Min	Max	psi-(bar)	psi (bar)
-0	20 (1.4)	180 (12.2)	25 (1.7)	200 (13.6)	5 - 20 (.3 - 1.4)	3000 (204)
-1	75 (5.1)	505 (34.3)	85 (5.8)	540 (36.7)	10 - 35 (.7 - 2.4)	3000 (204)
-2	100 (6.8)	1400 (95.2)	130 (8.8)	1500 (102)	30 - 100 (2.0 - 6.8)	7000 (476)
-3	235 (16.0)	3200 (218)	295 (20.0)	3400 (231)	60 - 300 (4.1 - 20.6)	7000 (476)
-4	425 (28.9)	5640 (384)	545 (37.0)	6000 (408)	120 - 360 (8.2 - 24.4)	12000 (816)

For base model: A9675

	Adjustable Range				Approx. Deadband (Actuation Value)	Proof Pressure
	Decreasing - psi (bar)		Increasing - psi (bar)			
	Min	Max	Min	Max	psi-(bar)	psi (bar)
-0	20 (1.4)	170 (11.6)	30 (2)	200 (13.6)	10 - 30 (.7 - 2.0)	3000 (204)
-1	75 (5.1)	495 (33.7)	95 (6.5)	540 (36.7)	20 - 45 (1.4 - 3.1)	3000 (204)
-2	100 (6.8)	1370 (93)	140 (9.5)	1500 (102)	40 - 130 (2.7 - 8.8)	7000 (476)
-3	235 (16.0)	3075 (209)	365 (24.8)	3400 (231)	130 - 325 (8.8 - 22.1)	7000 (476)
-4	425 (28.9)	5500 (374)	600 (40.8)	6000 (408)	175 - 500 (11.9 - 34.0)	12000 (816)

NOTES:
[1] Consult Supplementary Guide for specific deadband value

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Barksdale CONTROL PRODUCTS

NORGREN

R83

UL Listed Pressure Regulator for Industrial Cylinder Gas 1/4″ PTF Port Size

- **Underwriters Laboratories, Inc. listed (file number SA1089) for use with air, argon, carbon dioxide, helium, krypton, neon, nitrogen, xenon. For use with other gases, including oxygen, consult Norgren.**
- **Non-relieving and relieving models. Relieving models allow reduction of outlet pressure even when the system is dead-ended**
- **Two high pressure inlet ports and two regulated pressure outlet ports**
- **Diametrically opposite inlet ports provide easy manifolding of several regulators**
- **Easily replaceable valve cartridge contains valve, valve seat, valve spring, and filter element**



Ordering Information. Models listed include PTF threads, relieving diaphragm, 5 to 125 psig (0.3 to 8.5 bar) outlet pressure adjustment range†, and without gauge.

Port	Model	Flow * scfm dm^3/s()	Weight lb (kg)
1/4"	R83-200-RNLA	11 (5.2)	1.3 (0.59)

Alternative Models

R 8 3 - 2 0 0 - ★ N ★ A

Diaphragm	Substitute
Relieving	R
Non relieving	N

Outlet Pressure Adjustment Ranges †	Substitute
2 to 50 psig (0.1 to 3.5 bar)	E
5 to 125 psig (0.3 to 8.5 bar)	L
10 to 175 psig (0.7 to 12 bar)	N

* Approximate flow with 1000 psig (69 bar) inlet pressure, 60 psig (4 bar) set pressure and a 5 psig (0.35 bar) droop from set.

† Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

See Section ALE-25 for Accessories

Technical Data

Fluid: Air, argon, carbon dioxide, helium, krypton, neon, nitrogen, and xenon. For use with other gases, including oxygen, consult Norgren. Do not use the R83 regulator in beverage dispensing applications. Other Norgren regulators (R81 for soft drink, R82 for beer, R84 for carbonators) are available for use in dispensing systems.

Maximum pressure: 3000 psig (207 bar)

Operating temperature: -30° to 140°F (-34° to 60°C) *

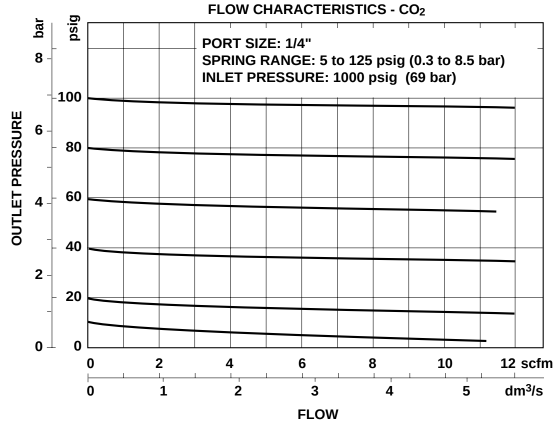
* Fluid must be dry enough to avoid ice formation at temperatures below 35°F (2°C).

Typical flow at 1000 psig (69 bar) inlet pressure, 60 psig (4 bar) set pressure and a droop of 5 psig (0.35 bar) from set: 11 scfm (5.2 dm³/s)

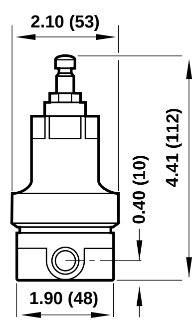
Materials

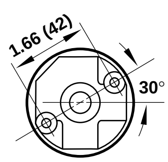
- Body: Brass
- Bonnet: Zinc
- Cartridge valve: Teflon, brass, stainless steel
- Diaphragm: Acetal and nitrile
- Seals: Nitrile

Typical Performance Characteristics



All Dimensions in Inches (mm)





Mounting Holes (2 Places)
0.18" (4.6mm) dia. by 0.39 (10mm) deep.
Use 10-32 thread forming screws.

Service Kits

Item	Type	Part number
Service kits	Diaphragm, relieving	570-51
	Diaphragm, non relieving	570-10
	Valve cartridge	5086-55

Valve cartridge includes the sealed cartridge and cartridge o-ring.

Warning

These products are intended for use with industrial compressed air, argon, carbon dioxide, helium, krypton, neon, nitrogen, and xenon. Do not use these products where *pressures* and *temperatures* can exceed those listed under **'Technical Data'.**

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

NORGREN

U.L. Listed Cylinder Gas Pressure Regulator For Industrial Gas Systems

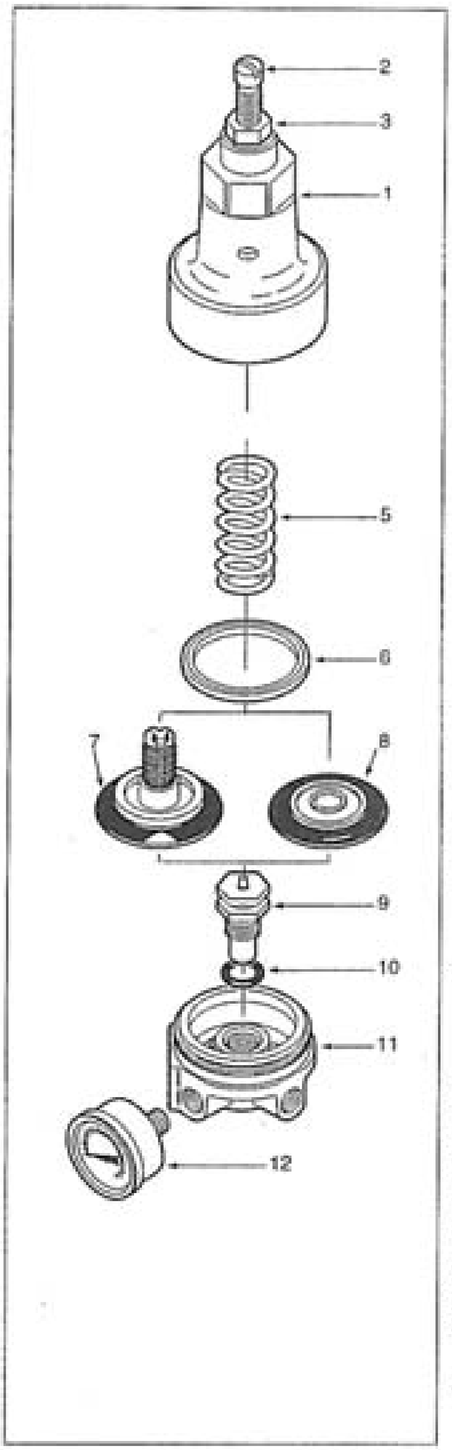
Installation & Maintenance Instructions

IM-232 (11/96) Supersedes 5/96

R83 - ★00 - ★★★★

Port	Relief Type	Gauge	Spring (Outlet pressure adjustment range) *	Thread
2....1/4"	R ...Relieving	N ...No gauge	E...2 to 50 psig (0.14 to 3.4 bar)	A ...PTF
	N ...Nonrelieving		L...5 to 125 psig (0.34 to 8.6 bar)	
			N...10 to 175 psig (0.7 to 12.1 bar)	

* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.



R83 APPLICATION

The R83 cylinder gas pressure regulator is used in industrial cylinder gas systems to control pressures of carbon dioxide, nitrogen, water pumped air, argon, helium, krypton, neon, and xenon.

R83 RELIEF TYPE

R83 regulators are available with a relieving or nonrelieving diaphragm. Regulators with a relieving diaphragm vent downstream gas, and hence reduce downstream pressure, when the regulator pressure adjusting screw is turned counterclockwise. ***Downstream pressure will not be reduced when the adjusting screw is turned counterclockwise if back-flow check valves are installed in the regulator outlet line.*** Regulators with a nonrelieving diaphragm do not vent downstream gas or reduce downstream pressure when the adjusting screw is turned counterclockwise.

TECHNICAL DATA

Fluids: Carbon dioxide, nitrogen, water pumped air, argon, helium, krypton, neon, and xenon. For use with other gases, including oxygen, consult Norgren. See ***WARNING*** if regulator is to be used in a beverage dispensing application.

Maximum primary (inlet) pressure: 3000 psig (206.9 bar)

Operating temperature: 0° to +140°F (-18° to +60°C)

Materials:

- Body: Brass
- Bonnet: Zinc
- Cartridge valve: Teflon, brass, stainless steel
- Seals: Nitrile
- Diaphragm: Acetal and nitrile

REPLACEMENT ITEMS

Diaphragm

- Relieving (7) 570-51
- Nonrelieving (8) 570-10

Cartridge valve (9, 10) 5086-55

INSTALLATION

This regulator has two primary (inlet) ports marked ***PRI***, and two secondary (outlet) ports marked ***SEC*** (secondary).

1. Connect the high pressure supply to either of the ***PRI*** ports. The other primary port can be plugged, used as a manifold port to another regulator, or used for a primary pressure gauge. Use a U.L. listed gauge.
2. Connect outlet lines which lead to the downstream system to either of the ***SEC*** ports. The other secondary port can be plugged, used as an additional secondary outlet, or used for a secondary pressure gauge. Use a U.L. listed gauge.

WARNING

Never connect the high pressure supply to the regulator ports marked ***SEC***. Never connect the outlet lines to the regulator ports marked ***PRI***. Improper connections will expose the downstream system to excessive pressure, resulting in equipment damage and/or personal injury. Before turning on gas pressure, turn regulator adjusting screw (2) fully counterclockwise.

ADJUSTMENT

1. Turn regulator adjusting screw (2) fully counterclockwise.
2. Turn on gas pressure.
3. Turn adjustment clockwise to increase secondary (outlet) pressure setting. Turn adjustment counterclockwise to decrease pressure setting.
4. Always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than that desired, then bring up to the desired pressure.
5. Tighten lock nut (3) to secure pressure setting.

DISASSEMBLY

1. Shut off inlet pressure. Reduce pressure in inlet and outlet lines to zero.
2. Turn regulator adjusting screw (2) fully counterclockwise.
3. Unit can be disassembled without removal from air line.
4. Disassemble in general accordance with the item numbers on exploded view. Use 5/8" socket to remove cartridge valve (9).

CLEANING

1. Clean parts with warm water and soap.
2. Rinse and dry parts. Blow out internal passages in body with clean, dry compressed air.
3. Inspect parts. Replace those found to be damage.

NOTE

Cartridge valve (9) is factory sealed and is not repairable. Replace cartridge valve if not sealing properly. Use only the specified Norgren parts for replacement. Do not use damaged or inoperative parts or assemblies. Maintain strict cleanliness when reassembling regulator.

ASSEMBLY

1. Lubricate threads and tip of adjusting screw (2), with a light, even coat of Lubriplate Aero.
2. Lubricate bonnet threads (1), with a light, even coat of Led-Plate 250.
3. Lubricate o-ring (10) with a light coat of Dow Corning DC 44 silicone grease.
4. Assemble the unit as shown on the exploded view.
5. Torque Table

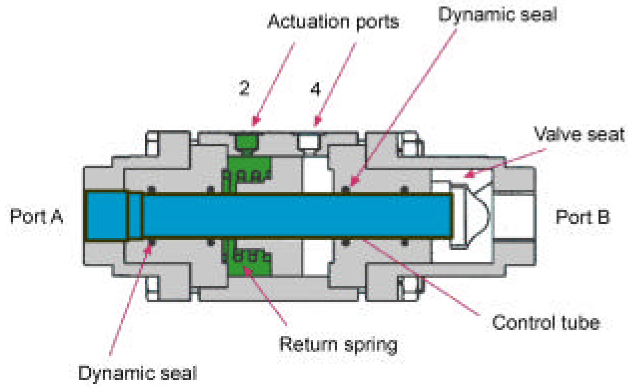
Item	Torque
9 (Cartridge valve)	45 to 65 in-lbs (5 to 7 Nm)
1 (Bonnet)	25 to 30 ft-lbs (34 to 40 Nm)

WARNING

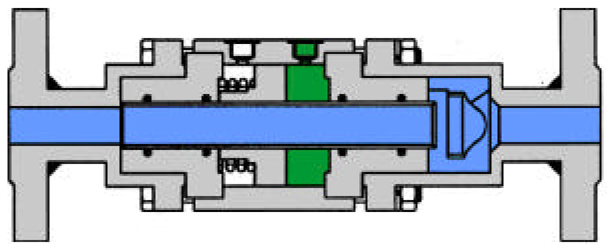
For safety using Model R83 Regulators in system applications, the following procedures must be followed.

1. Pressure relief devices of sufficient capacity must always be used in the secondary (outlet) lines downstream of the pressure regulator. Do not remove or attempt to adjust, plug, block or otherwise defeat the purpose of the relief device in any manner. Failure to provide pressure relief of sufficient capacity to hold outlet pressure below the lowest working pressure rating of any piece of equipment installed in the outlet lines can result in equipment damage and/or personal injury.
2. Norgren approval must be obtained before using a type R83 regulator in any beverage dispensing application.
3. Regulators must not be used where temperature or pressure may exceed those specified in the *TECHNICAL DATA* paragraph.
4. These regulators are not intended for use in life support systems or beverage dispensing systems.
5. The accuracy of the indication of pressure gauges can change, both during shipment (despite care in packaging) and during the service life. If a pressure gauge is to be used in conjunction with these products and if inaccurate indications may be hazardous to personnel or property, the gauge should be calibrated before initial installation and at regular intervals during use. For gauge standards refer to ANSI B40.1.

Types : VMK 10 – VMK 50 (H)
VSV-M 40 - VSV-M 50
2/2- way coaxial valve
externally controlled
threaded



VFK 15 - VFK 50 (H)
VSV-F 40 -VSV-F 250
2/2- way coaxial valve
externally controlled
flanged



Principle of valve operation :

The VMK, VFK and VSV series are externally controlled, threaded or flanged, coaxial shut off valves. The externally controlled valves are available in air operated or hydraulically operated versions.

The air operated valves can be actuated by air or neutral gases. (4 -10 bar, 60 -150 psi.)

The hydraulic operated valves can be actuated by common hydraulic fluids. (pressure as ordered)

To ensure correct function the valve should be equipped at least with a 4/2-way pilot valve.

The following describes the function of the both **normally closed** and **normally open** valves (equipped with a 5/2-way Bosch pilot valve) :

normally closed :

The outlet B-port is closed by air pressure (+ spring) holding the control tube against the seat. To ensure that the valve seat is tightly sealed, port 2 of the actuator body must be pressurized (see upper picture). This is achieved by de-energizing the pilot valve. When the pilot valve is energized port 2 is relieved and port 4 is pressurized. This moves the control tube away from the seat, opening the valve (see lower picture).

normally open :

The outlet B-port is opened by air pressure (+ spring) holding the control tube away from the seat. To ensure that the valve completely opens port 2 of the actuator body must be pressurized. This is achieved

by de-energizing the pilot valve. When the pilot valve is energized port 2 is relieved and port 4 is pressurized. This moves the control tube against the seat, closing the valve.

A.) Installation instructions

To ensure that our maintenance-free equipment remains in perfect working conditions the following points should be observed.

1.) Pipe work

General :

Before installing the valve, check that the lines are absolutely clean so that no residue from the pipe installation process can settle in the valve during operation. The flow direction port **A → B** indicated on the 2/2-way coaxial valves (by arrows) must be maintained (unless the valve is designed for bi-directional flow applications).

The piping should be designed in a way that no forces act along the valve's longitudinal axis. Also ensure that no tensile, compression or shearing forces can act on the valve and thereby lead to malfunctioning.

2.) Pilot valve and electrical wiring

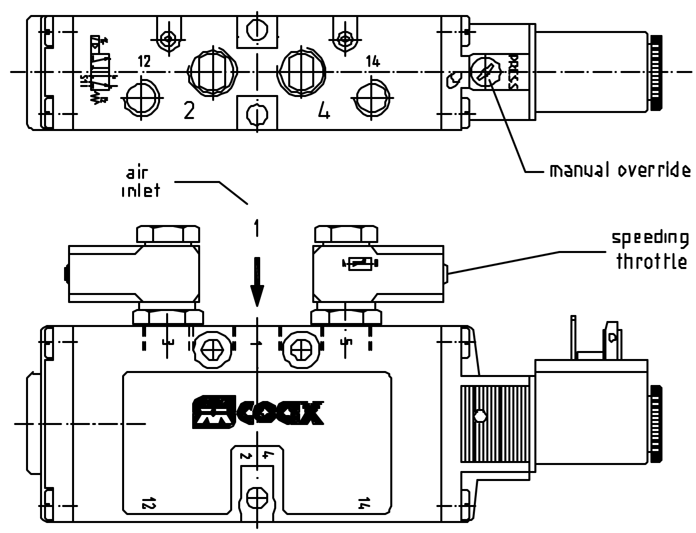
General :

Valves rated for temperatures above 140° F must use a remotely mounted pilot valve to prevent damage from the high temperature.

If the valve has additional features such as a limit switch, explosion proof coil, etc. the installation instructions on the corresponding data sheet(s) must be followed.

Pneumatic pilot valve :

Port 1 on the pilot valve is the air inlet
Port 2 is connected to port 2 on the actuator.
Port 4 is connected to port 4 on the actuator.



Wiring attachment :

Please follow the installation instruction in the appendix.

B.) Operating instructions

To ensure that our maintenance-free equipment remains in perfect working conditions the following points should be observed.

1.) Coax valve

General :

Before switching the valve check that the installation instructions have been complied with and that all lines and wires are properly connected.

Media, temperature, pressure :

note : the valve is designed for a specific application!!! If application conditions change (media, temperature or pressure) contact our engineering department.

Also contact our engineering department before installing the valve in an application other than the one it was originally designed for!!!

2.) Pilot valve (Standard Bosch pneumatically)

General :

Before operating the valve check that the installation instructions have been complied with and that all lines and wires are properly connected.

Actuation media :

note : the valve can be actuated by air or inert gases at ambient temperature.

Actuation pressure :

note : To ensure a correct function of the Standard Bosch pilot valve the actuation pressure should be within the range of 4 - 10 bar (60 - 150 psi.). For all other types of pilot valves, follow the manufacturer's specifications.

Voltage :

note : The supply voltage must be the same as stated in the order or on the solenoid.

Speed adjustment by throttles :

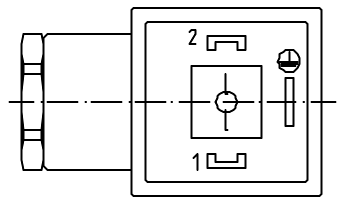
note : Our pilot valves are supplied with 2 completely open throttles. To reduce the actuation speed (slow the valve) the adjustment screws on the throttles must be turned clockwise. The throttle in exhaust-port 2 controls the opening speed, the throttle in exhaust-port 4 controls the closing speed.

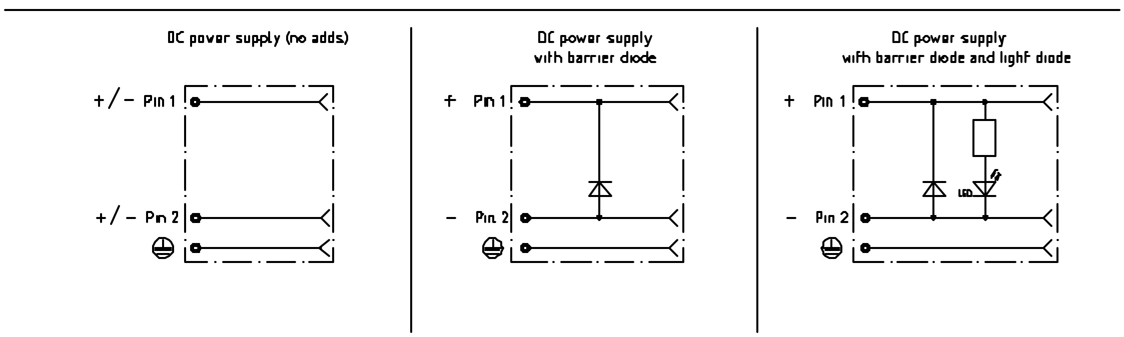
C.) Appendix

Wiring instructions :

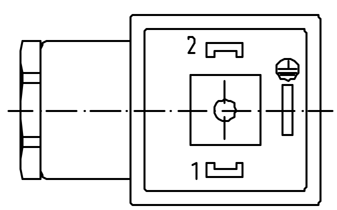
Electrical connections are made as follows; DIN plugs with a barrier diode are polarity sensitive!

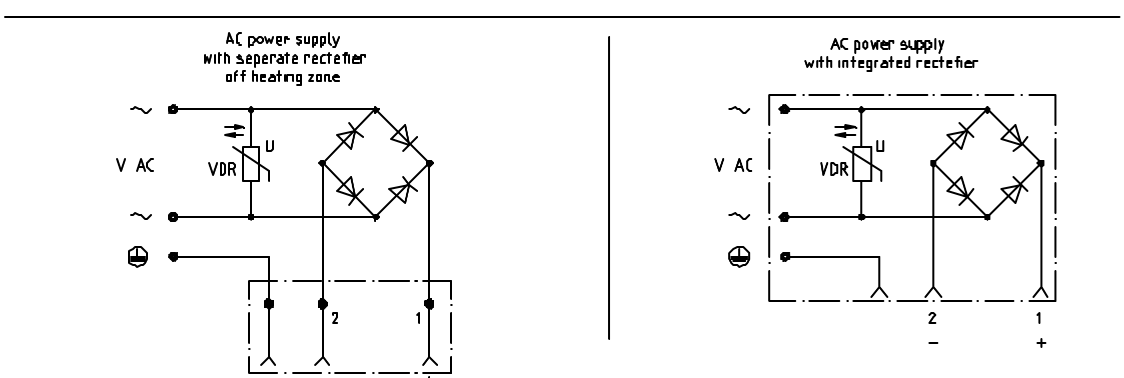
DIN- Plug 43650 DC :





DIN- Plug 43650 AC :





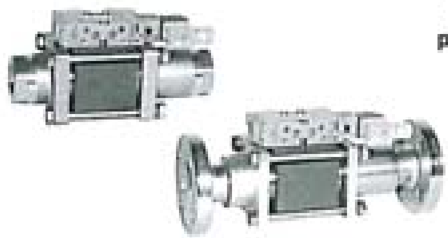
http:// www.co-ax.de

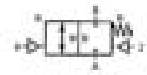
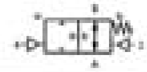
coax data sheet L5.07-01/2004

coaxial valves

type VMK 25 VFK 25

5-VMK 25
5-VFK 25
valve type with pilot valve



2/2 way valve	**externally controlled**
pressure range	PN 0-100 bar
orifice	DN 25 mm
connection	thread/flange
function	valve normally closed symbol **NC** 
	valve normally open symbol **NO** 

design	pressure balanced, with spring return	
body materials	The materials refer to parts in contact with the media	
	① brass	② steel, galvanized
	③ brass, nickel plated	⑤ without non-ferr.metals
	④ steel, nickel plated	⑥ stainless steel
valve seat	synthetic resin on metal	
seal materials	NBR	PTFE, FPM, CR, EPDM

details needed for main valve:
- orifice
- port
- function NC/NO
- operating pressure
- flow rate
- media
- media temperature
- ambient temperature
- type of actuation

details needed for pneumatic actuation:
- nominal voltage
- type of protection
- actuation pressure range min/max
- low wattage coil, actuation p-range 4-7 bar
- pilot valve type

details needed for hydraulic actuation:
- actuation pressure range min/max
- hydraulic control valve function

general specifications

		general specifications	options
ports	VMK	threads G 1 - G 1 1/2	special threads
	VFK	flanges PN 16/40/100	special flanges
function		NC	NO
pressure range	bar	0-16/0-40/0-64/0-100	> 100 bar
	m³/h	12,2	
vacuum	leak rate		< 10⁻⁶ mbar·l·s⁻¹
pressure-vacuum	$P_1 = P_2$		pressure side max. 100 bar
			vacuum side leak rate < 10⁻⁶ mbar·l/s⁻¹
back pressure	$P_2 > P_1$		available (max. 16 bar)
media		gaseous - liquid - highly viscous - gelatinous - pasty - contaminated	
abrasive media			version available
damping	opening		
	closing	by throttles on pilot valve	
flow direction	A ⇒ B	as marked	bi-directional upon request
switching cycles	1/min	200	
switching time	ms	opening 50-3000 closing 50-3000	
media temperature	°C	direct mounted pilot valve 60	remote mounted pilot valve pusbox
ambient temperature	°C	direct mounted pilot valve 50	temperature range of media max. 180°C
flush ports			available
leak ports			available
limit switches			inductive/mechanical upon request
manual override		via pilot valve	
approvals			LR/GL/WAZ
mounting			mounting brackets
weight	kg	VMK 6,7 FK 9,0	
additional equipment			upon request

electrical specificatios

		electrical specificatios	options
nominal voltage	U_s	24 V DC	special voltages upon request
	U_s	230 V 50 Hz AC	special voltages upon request
power consumption	DC	4,8 W	2,5 W
	AC	pick up 11,0 VA holding 8,5 VA	
protection	IP 65 (IP 54)	acc. DIN 40 050	
energized duty rating	ED	100%	
connection		plug acc. DIN EN 175301-803 form B	
additional equipment		illuminated plug, with varistor	connector M12x1
coil		4 positions x 90° / wire diameter 6-8 mm	
max. temperature	media	60°C	
	ambient	50°C	
explosion		nominal voltage U_s	direct current 24V 3,25 W
proof	EEx m II T5	power consumption	alternating curr. 230V 50Hz 2,90 W

pneumatic specifications

		pneumatic specifications	options
actuation pressure	bar	4-10	
air consumption	cm³/stroke	18	
cycle speed	main valve speed variable by throttles on pilot valve		
control	preferably by 5/2-way-pilot valve		
pilot valve interface	co-ax / NAMUR		ISO 1
actuator ports	2/4	G 1/8	G 1/4

hydraulic specifications

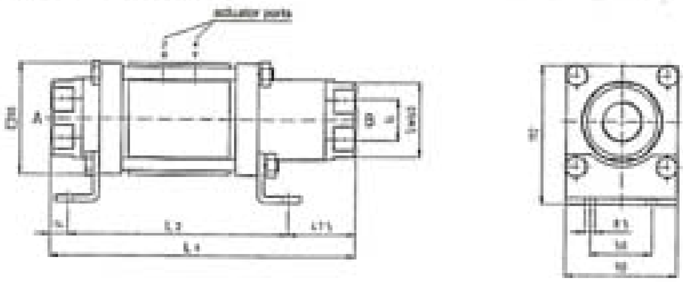
		hydraulic specifications	options
actuation pressure range	bar	10-30 / 30-60	
control	preferably by 4/2-way-control valve		
actuator ports	X/Y	G 1/4	NPT 1/4

- specifications not highlighted are standards
  specifications highlighted in grey are optional

müller co-ax ag · Gottfried-Müller-Str. 1 · D-74670 Forchtenberg · Germany · fon +49(0)7947/828-0 · fax +49(0)7947/828-11 · Email info@co-ax.de

type **VMK 25**

funktion: NC
closed when not actuated

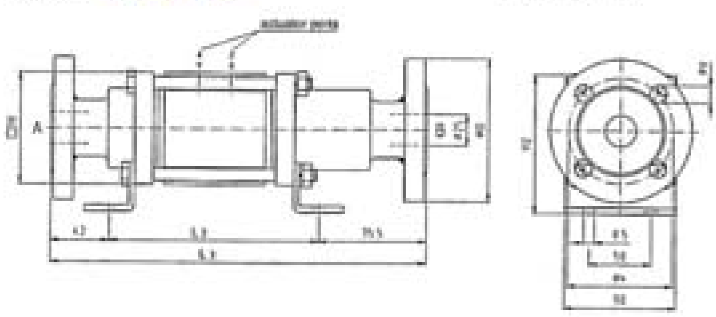


constructive lenght	L_1	L_2	L_3
standard	246	184.5	302
with 1/2 inductive limit switches	260	198.5	316
with force-feed lubrication nipple	276	214.5	332
with mechanical limit switches	270	208.5	326

flanges PN	DIN	øD	øk	ød
16	2633	115	85	14
40	2635	115	85	14
100	2637	140	100	18

type **VFK 25**

funktion: NO
open when not actuated



pneumatic actuation (separately)



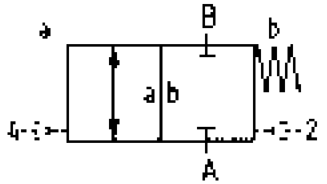
5/2-way-pilot valve
flow rate 700 l/min
pressure range 3-10 bar G 1/8



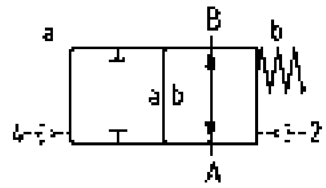
5/2-way-pilot valve ISO 1
flow rate 700 l/min
pressure range 3-10 bar G 1/4

The application-specific layout relating to temperature, pressure conditions, switching behavior, media and its consistency may restrict the range of use or necessitate relevant modifications to materials used and seal arrangements.

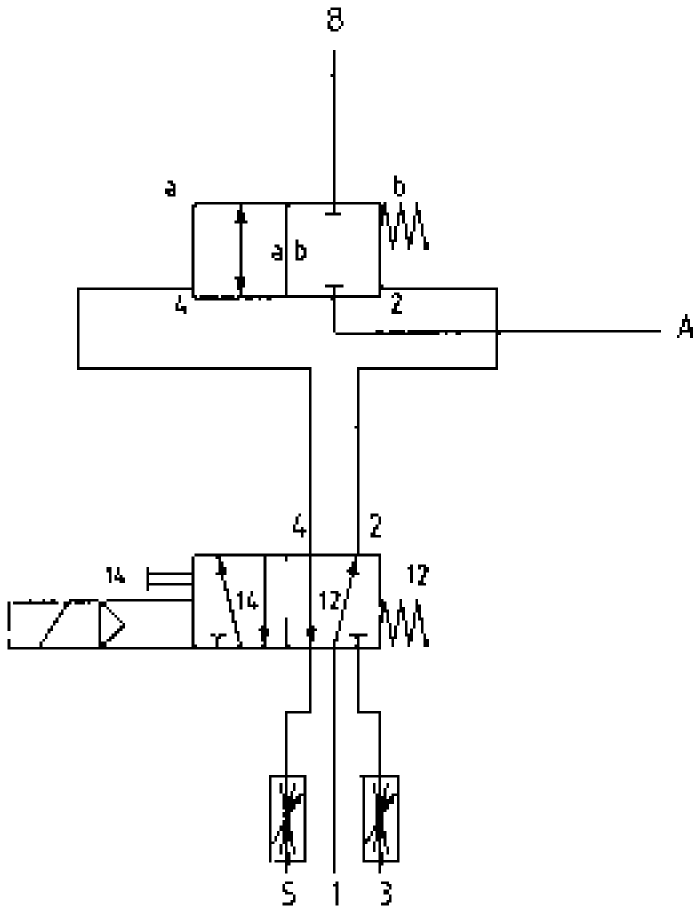
2/2-Wege



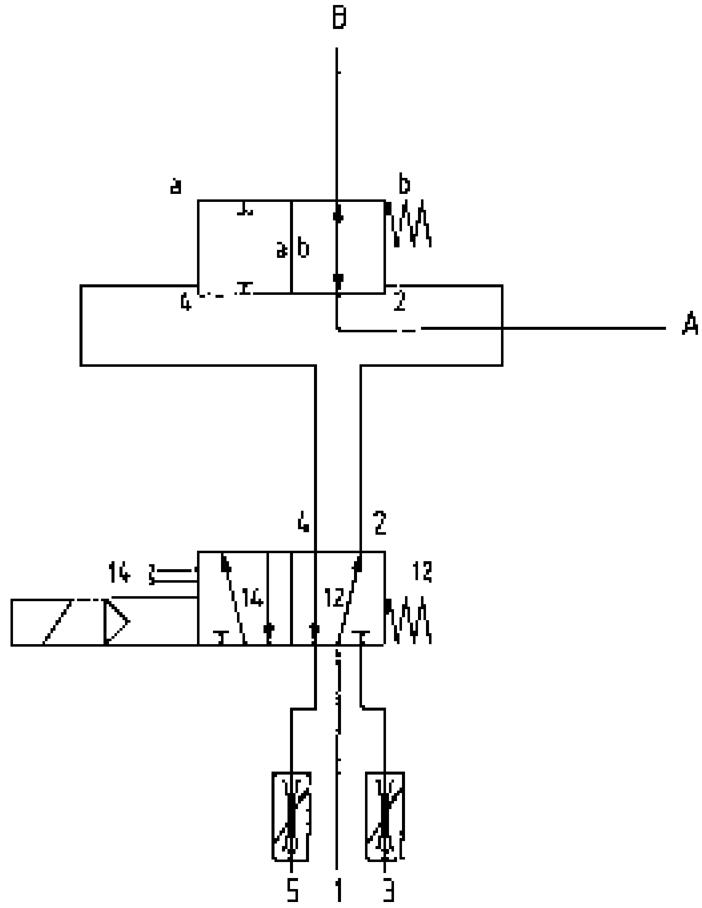
NC



NO



NC mit coax P:lot

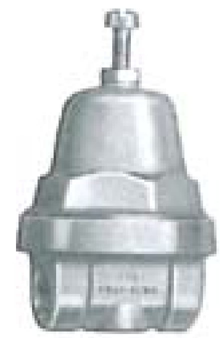


NO mit coax-Pilot

Cash Valve

Application: Types CP and CP-2

Types CP and CP-2 are frequently used as pilot valves in Rotary Screw compressors to control receiver pressure or compressor discharge pressure. The pilot valve, supplied with air pressure from the receiver regulates the air pressure to a cylinder or diaphragm which positions the control device in the compressor suction line and/or positions the speed control on engine-driven units. One additional use for the pilot is to maintain proper circulation of the lube oil in the compressor. Use of the Types CP and CP-2 significantly contribute to considerable savings in energy. Additionally, they lead to quieter compressor operation and reduced wear.



Principle of Operation

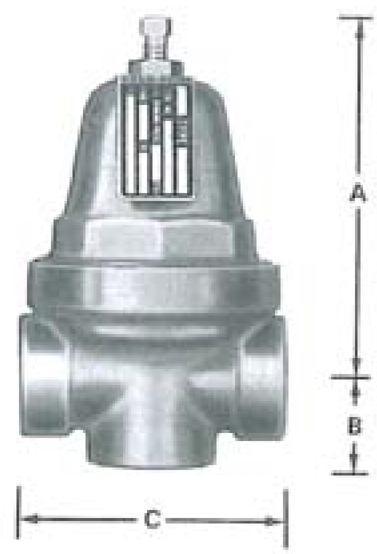
The Type CP and Type CP-2 provide a regulated output pressure that increases at a pre-determined rate as the receiver pressure or compressor discharge pressure increases above the desired pressure setting of the pilot. The pilot is provided to increase, in straight line fashion, on a ratio of 1 to 1, 2 to 1, 3 to 1; or whatever ratio or differential control is required for proper functioning of the compressor. For example, assume the pilot is to start to open when receiver pressure reaches 100 psi; further assume that the pilot is operating with a 2 to 1 ratio. At this point the pilot output pressure is 0 psi. On 10 psi increase the pilot will provide a controlled discharge pressure from 0 to 20 psi as compressor increases from 100 psi to 110 psi. (See graph on reverse)

Construction

Type CP and Type CP-2 have bronze body and spring chamber, stainless steel seat, phosphor bronze diaphragm, fiber gaskets. Type CP-2 has a larger seat for increased capacity. Type CP is available in $\frac{1}{4}$" pipe size with either side inlet/side outlet or side inlet/bottom outlet. Type CP-2 is available in $\frac{1}{4}$" or $\frac{3}{8}$" sizes with either side inlet/side outlet or side inlet/bottom outlet. All connections are threaded female.

Type CP Adjustment Ranges (psi)				
2-25	15-65	40-100	75-175	100-250

Type CP-2 Adjustment Ranges (psi)					
0-30	31-50	51-80	81-150	151-250	200-400



Dimensions

Type	Size (Inches)	Connections	Dimensions (Inches) A	B	C	Ship. WT. (Pounds)
CP	$\frac{1}{4} \times \frac{1}{4}$	side inlet; side or bottom outlet	$3\frac{5}{8}$	$\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{8}$
CP-2	$\frac{1}{4} \times \frac{1}{4}$	side inlet; side or bottom outlet	$4\frac{1}{2}$	$\frac{3}{4}$	$2\frac{11}{16}$	$2\frac{1}{2}$
CP-2	$\frac{3}{8} \times \frac{3}{8}$	side inlet; side or bottom outlet	$4\frac{1}{2}$	$\frac{3}{4}$	$2\frac{11}{16}$	$2\frac{1}{2}$

How To Order

Cash Valve Types CP and CP-2 Pilots are suitable for adaptation to specialized compressor designs. For application of these valves in a special design or along the more standard applications discussed in this Data Sheet, please contact the factory.

Types CP and CP-2 Rotary Screw Compressor Pilot Valves

Typical Installation Schematic

In order to provide a better idea of how the Type CP and Type CP-2 are used we have provided the system schematic at right. This is intended to represent a "typical" application, and, as such, is greatly simplified. For your specific application requirements, please consult the factory.

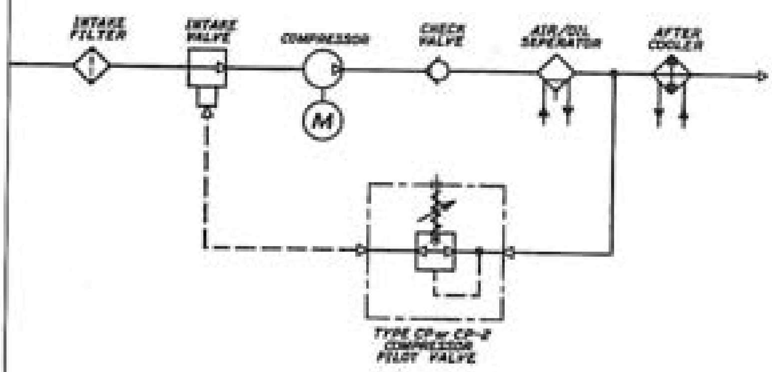
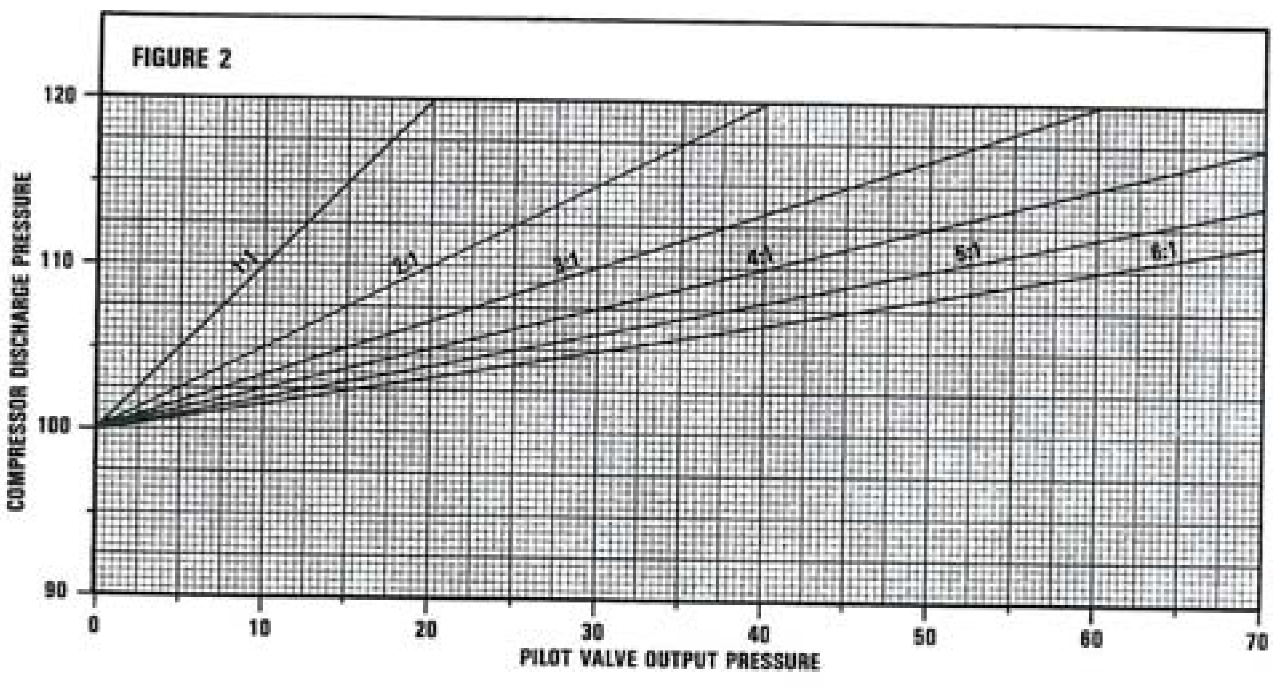


Fig. 1 - Typical Rotary Screw Compressor System Schematic

Performance Graph

The graph below illustrates the linear output of the Types CP and CP-2 valves for a given set point and a variety of ratios. The graph is given in .5 psi increments.

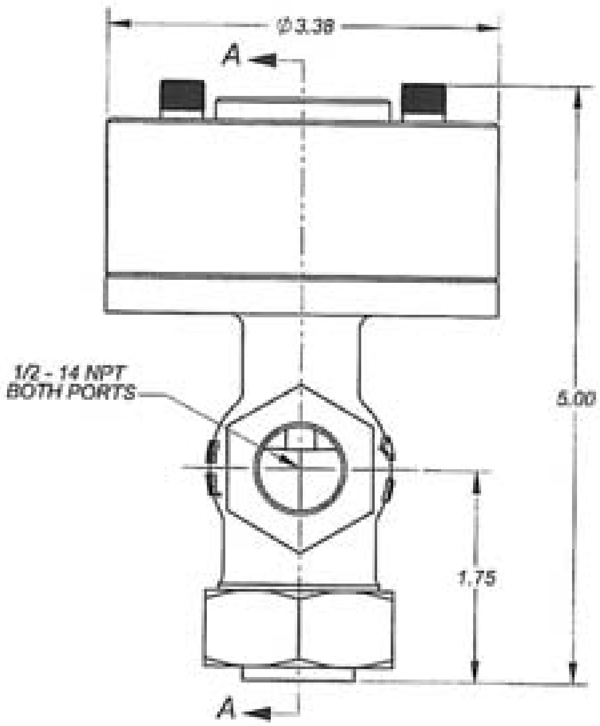


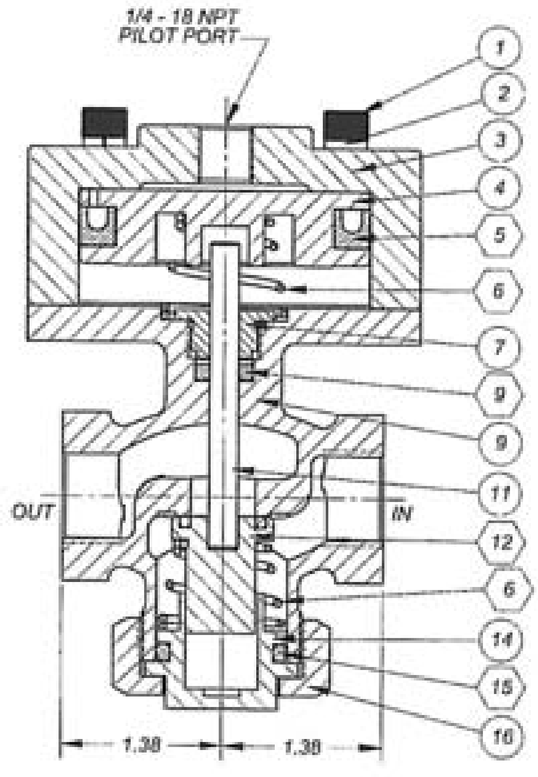
953 Old U.S. Highway 70
Black Mountain, NC 28771
Phone: 800-879-2042 • 828-669-3700
Fax: 800-879-2057 • 828-669-0586

www.cashvalve.com

CAVMC-0522-US-0609

B324508





SECTION A-A

NOTE:
1. PARTS LEGEND: PARTS IN HEXAGON BOX ARE INCLUDED IN BOTH ASSEMBLY AND REPAIR KITS
2. REPAIR KITS:

BUNA - N	20-1691
VITON	20-1972
MOLY	20-2177

ITEM NO.	QTY.	DESCRIPTION
1	4	SCREW, SHC, 1/4-20 X 1.00 BLOX
2	4	WASHER, LOCK, STEEL, 1/4
3	1	PILOT CAP
4	1	PISTON, PILOT, 2.5", ALUM
5	1	U - CUP
6	2	SPRING, PILOT
7	1	NUT, GLAND
8	1	POLYPAK
9	1	BODY, 1/2" NPT
10	1	PIN, ACTUATING, 1/4
11	1	POPPET ASSY.
12	1	GUIDE, POPPET
13	1	O-RING, BUNA, #212
14	1	NUT, HEX

APPROVED FOR PRODUCTION 8/25/2004

REVISIONS

PREVIOUS REVISIONS OMITTED

M — REDRAWN TO CURRENT ENGINEERING STANDARDS ECL: 99193 08-31-99 JDR

Tolerances Unless Otherwise Specified: TYPE	FINISHED	AS CAST
DEC .00	± .015	± .030
DEC .000	± .005	± .010
FRACTIONAL	± 1/64	± 1/32
ANGLES	± 1/2°	± 1°

MATERIAL SPEC.

PROCESS SPEC.

PC NO. 324508

MADE FROM

1/2" 2-WAY POPPET VALVE N.C.
PILOT OPERATED, 8:1 RATIO

B 324508

CAD FILE 324508.SLDDRW

DRAWN	CHECKED	APPVD.
JDR	MFM	MFM
08-24-99	08-24-99	9-10-99

SHEET NO. 1 of 1 SHEETS

SCALE 1:1

APPROX. WT.

Lexair, Inc.

2025 Mercer Rd. Lexington, Kentucky 40511

HCPN 60938

HCPN
60938

Engineering Bill of Materials

1/2,DPO,N/C,8-1,VITON *Part Number: 324508-26*

Part / Drawing Number	Item	Description / BOM Memo	Quantity
01-0026 / A01-2020	000001	SCREW,SHC,1/4-20 X 1.75,BLOX	4.00000 EA
01-0501 / A01-0500	000002	WASHER,LOCK,1/4,HI COLLAR,ZINC	4.00000 EA
04-09-212 / A04-09-XXX	000015	O-RING,VITON,Ø.859ID X.139,75 DURO	1.00000 EA
06-0065 / A06-0000	000005	U-CUP,VITON,Ø1.88 OD XØ1.88ID X.31	1.00000 EA
07-0076 / A07-0076	000008	POLYPAK,MOLY,Ø.50 OD XØ.25ID X.13	1.00000 EA
20-0067 / A20-0067	000016	NUT,HEX,1/2,3/8,1/2 NPT,2-W	1.00000 EA
20-0068 / A20-0068	000014	GUIDE,POPPET,2-W	1.00000 EA
20-0134 / A20-0134	000007	NUT,GLAND,2-W	1.00000 EA
20-0185 / B20-0185	000009	BODY,1/2 NPT,2-W	1.00000 EA
20-1329 / A20-1329	000006	SPRING,PISTON	2.00000 EA
20-1624 / A20-2072	000011	PIN,POPPET,Ø.250 X 2.625,2-W	1.00000 EA
20-2238 / A20-2238	000012	POPPET ASSY,SMALL,VITON,90 DURO	1.00000 EA
21-0371 / B21-0043	000004	PISTON,Ø2.5,ALUM	1.00000 EA
21-0372 / B21-0054 REV	000003	CAP,PILOT,ALUMINUM	1.00000 EA

End of Report

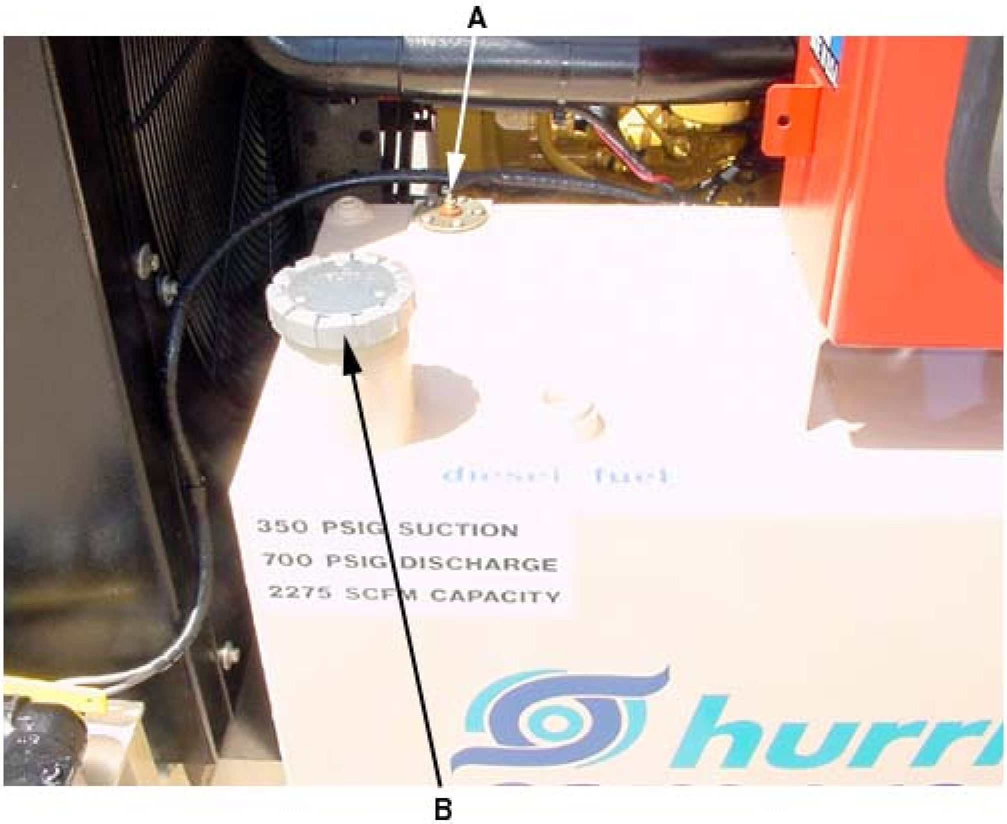
This report was requested by BPOWELL


A
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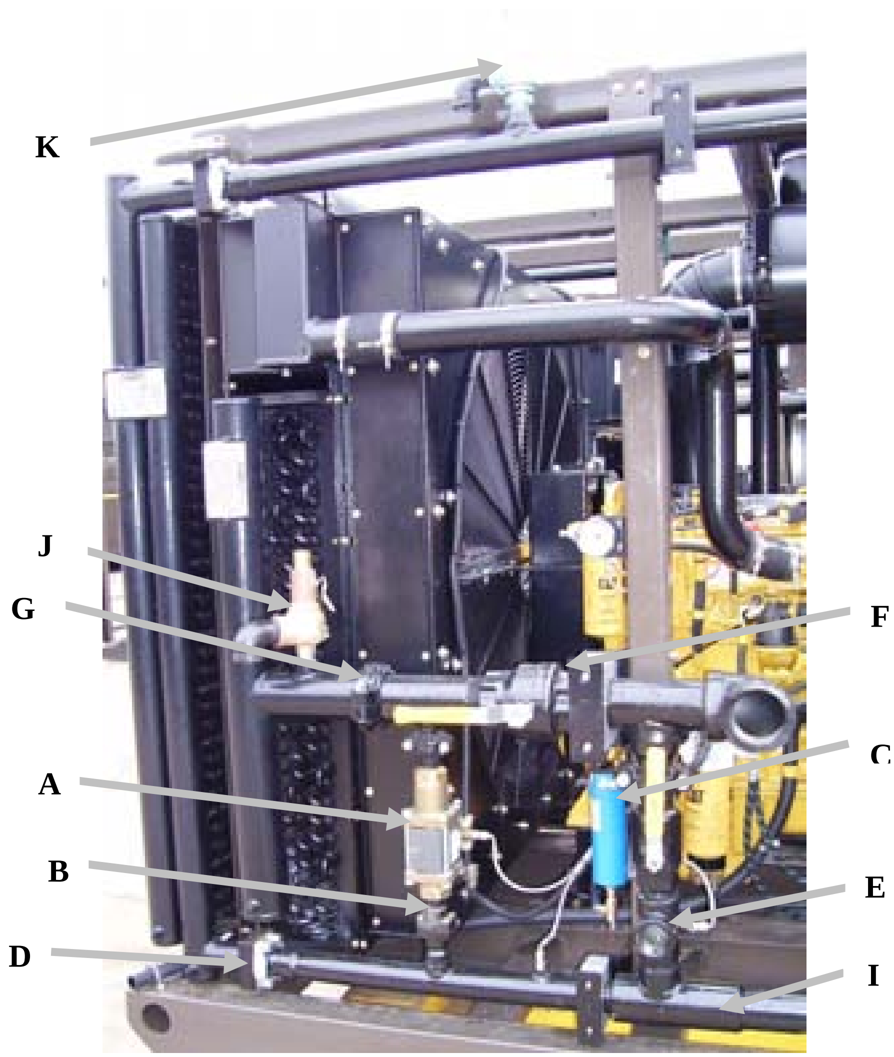
Item	Part Number	Description	Qty
A	63336	0-600 psig Gauge	1
B	63337	0-1500 psig Gauge	1
C	61312-01	3 Position Selector Switch	1
D	62070	Pushbutton Switch	1
E	62679	70 amp circuit breaker	1
F	62072	2 Position Selector Switch	1
G	62750	Green Lens	1
H	61312-04	3 Position Momentary Switch	1
J	60328	Tattle Tale Relay	3
K	61344	440°F Switchgauge	1
L	61938	0-100 psig Switchgauge	1
M	63259	20 amp Circuit Breaker	1
N	61883	160°F Switchgauge	1
P	62215	15 amp Circuit Breaker	2
Q	62430-03	0-100 psig Gauge	1
R	61798	Fuel Level Gauge	1
S	63277	Exhaust Temperature Gauge	1
T	62430-02	250°F Gauge	1
U	62430-01	Tachometer	1
V	62430	Murphy Powerview 100	1



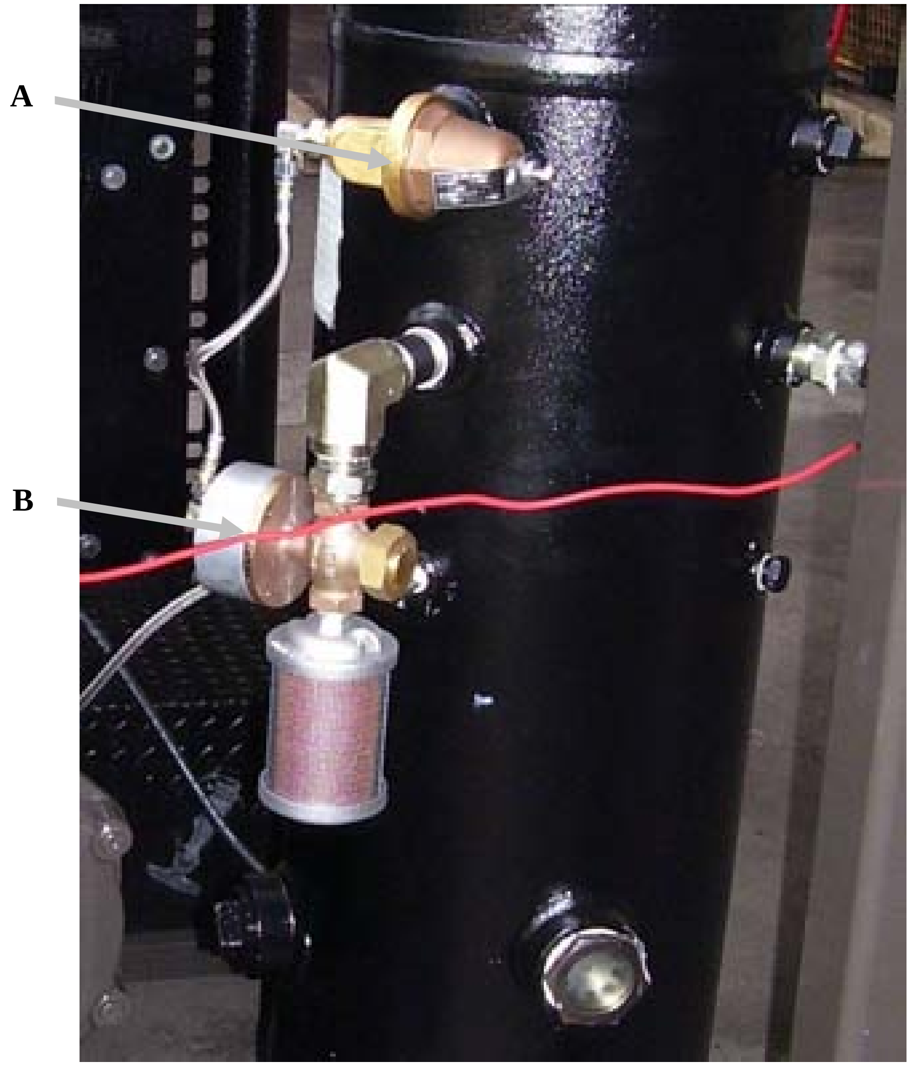
Item	Part Number	Description	Qty
A	61312-03	Contact Block	9
B	62048	Lamp Base	1
C	61581	Lamp	1
D	62127	Pressure Switch	1
	62127-01	Microswitch for Pressure Switch	1
E	60795	0-2000 psig Gauge	1
F	62489	E-Stop Button	1
G	62072	2 Position Selector Switch	1



Item	Part No.	Description	Qty.
A	62776	Fuel Sender	1
B	61475	Fuel Cap	1



Item	Part No.	Description	Qty.
A	63746	Co-Ax Valve Air Operated	1
	63746-01	Co-Ax Valve rebuild kit	1
	63746-02	Pilot Valve	1
	63746-03	Coil	1
	63746-04	Flow Control Filters	1
B	30252	2-219 O-Ring	1
C	63869-01	Absorption element	1
D	62917	2-228 O-Ring	3
E	90088	2” npt Ball Valve	1
F	61035	3” npt Ball Valve	1
G	90798	3” Victaulic Gasket	3
H	62917	2-228 O-Ring	1
I	63704	Backpressure Regulator	1
J	61731	450 psig Safety Relief Valve	1
K	61563	1200 psig Safety Relief Valve	1



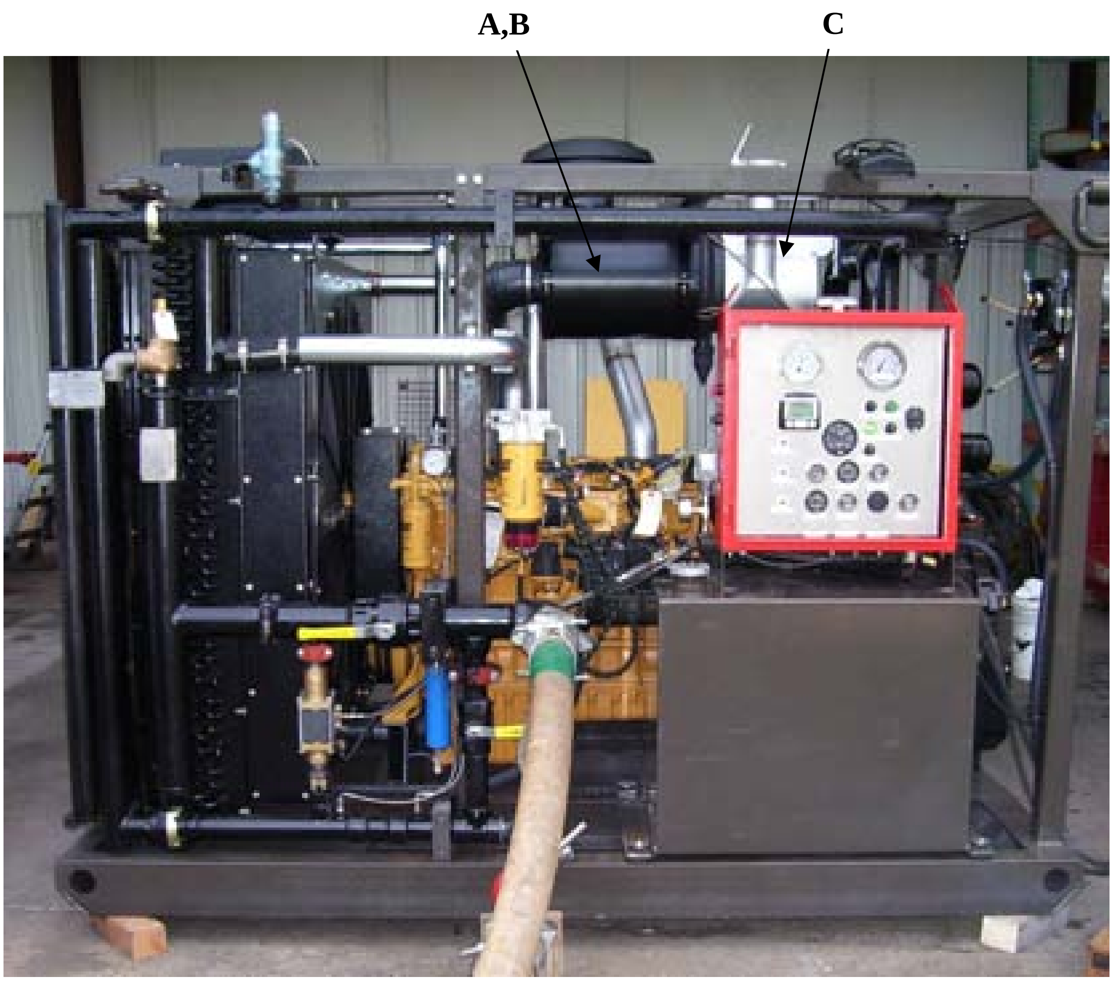
A

B

Item	Part No.	Description	Qty.
A	63140	Back Pressure Regulator	1
B	60938	Pilot Valve	1
C			



tem	Part No.	Description	Qty.
A	62512	Regulator	1
B	61853	0-100 psig gauge	1



tem	Part No.	Description	Qty.
A	61760-01	Primary Filter Element	1
B	61760-02	Safety Filter Element	1
C	51176	Exhaust Assembly	1

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
10206	000 (CURRENT)	BASE	STANDARD	EA	BOOSTER B7-41/1000 2400SCFM

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
21864	*	STD	1.00	EA	0.000%	ENG GROUP 7T-276-41B	
21449	*	STD	1.00	EA	0.000%	PUMPER GROUP 6.7 & 7T-276-41B	
21916	*	STD	1.00	EA	0.000%	COUPLING GROUP 7-276-41B	
21865	*	STD	1.00	EA	0.000%	FRAME GROUP 7-276-41B	
21866	*	STD	1.00	EA	0.000%	COOLING GROUP 7-276-41B	
21867	*	STD	1.00	EA	0.000%	INST/CTRL GRP 7-276-41B	
21868	*	STD	1.00	EA	0.000%	FUEL GROUP 7T-276-41B	
21869	*	STD	1.00	EA	0.000%	AIR CLEANER GROUP 7-276-41B	
21870	*	STD	1.00	EA	0.000%	EXHAUST GROUP 7-276-41B	
21905	*	STD	1.00	EA	0.000%	PIPING GROUP SUCTION 7-276-41B	
21906	*	STD	1.00	EA	0.000%	PIPING GROUP 1ST STG 7-276-41B	
21875	*	STD	1.00	EA	0.000%	COOLANT CONNECT 7-276-41B	
21876	*	STD	1.00	EA	0.000%	AUTO UNLOAD GRP 276-41B	
21898	*	STD	1.00	EA	0.000%	KIT CRANK CASE VENT 6.7-276-41	
21907	*	STD	1.00	EA	0.000%	FINISH GRP 7T-276-41B-1000	
21256			0.00	EA	0.000%	ILLUS GENERAL PIPING 6T-276-41	
10206-01	*	STD	0.00	EA	0.000%	SPARE PARTS 7-276-41B	
HEAT SINK GREAS			0.00	EA	0.000%	GREASE HEAT SINK	
22061	000	STD	1.00	EA	0.000%	BYPASS GRP BYPASS/BCKPRSSR REG	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21864	000 (CURRENT)	BASE	STANDARD	EA	ENG GROUP 7T-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL-	U/M	SCRAP %	DESCRIPTION	FIND# STEP
64075			1.00	EA	0.000%	ENGINE CAT C7 T3 250@1800 DRIV	
51311-12			2.00	EA	0.000%	MOUNT ASSY ENGINE REAR C7	
51311-10	*	STD	1.00	EA	0.000%	MOUNT ASSY FRT ENGINE C7	
80356			8.00	EA	0.000%	HHCS M16 X 2.0 X 90MM GR10.9	
51311-20	*	STD	1.00	EA	0.000%	BRACKET ASSY FUEL FILTER SUPT	
61462			1.00	EA	0.000%	ADAPT 1/2 NPTFx3/4-16 STM CS	
90249			1.00	EA	0.000%	BSHG 3/4 X 1/2 2000# FS	
60563			2.00	EA	0.000%	VALVE BALL 1/2 NPT FEMALE	
90707			2.00	EA	0.000%	NIPL 1/2 NPT HEX CS	
60737			2.00	EA	0.000%	L 1/2 NPT CS 90DG STREET	
90135			2.00	EA	0.000%	ADAPT BARB 1/2 NPTM X 3/4 BRAS	
90847			84.00	IN	0.000%	HOSE 1" ID OIL	
120-67742			2.00	EA	0.000%	CLAMP HOSE #16 1"	
64969			1.00	EA	0.000%	GUARD BELT R/H C-7	
64969-01			1.00	EA	0.000%	GUARD BELT L/H C-7	
120-11771			4.00	EA	0.000%	CLAMP HOSE #12 - 3/4"	

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21449	000 (CURRENT)	BASE	STANDARD	EA	PUMPER GROUP 6.7 & 7T-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
42374			4.00	EA	0.000%	HEAD 1ST & 2ND STG 6T-414-62	
42093			1.00	EA	0.000%	COVER LIFT PUMP 4045JD	
50065			1.00	EA	0.000%	PLATE CRANKCASE BRTHR BLOCK	
42085			1.00	EA	0.000%	OIL PUMP COVER JD4045 REV ROT	
51106			1.00	EA	0.000%	PLATE ASSY FLYWHL HSG VENT	
42105			1.00	EA	0.000%	BASEPLATE 276 CYL	
63211			8.00	EA	0.000%	BOLT JD4045 CONN ROD	
42123			1.00	EA	0.000%	PLUG JD4045 COOLANT JACKET MOD	
42124			1.00	EA	0.000%	PLATE WATER PUMP COVER JD4045	
61396			4.00	EA	0.000%	O-RING 2-225 VITON 90 DURO	
60056			4.00	EA	0.000%	O-RING 2-233 VITON 90 VITON	
61395			4.00	EA	0.000%	O-RING 2-034 VITON 90 DURO	
61392			8.00	EA	0.000%	O-RING 2-043 VITON 90 DURO	
60048			4.00	EA	0.000%	O-RING 2-154 VITON 90 DURO	
40013			8.00	EA	0.000%	PLATE LOCK	
63311			0.00	EA	0.000%	O-RING JD4045 FLYWHL HSG	
41643			4.00	EA	0.000%	VALVE COMPR BOOSTER	
42189	*	STD	4.00	EA	0.000%	CYL, COMPR 2.50 BORE 276-41	
42379	*	STD	4.00	EA	0.000%	PISTON COMPR 2.50DIA 276-41 ALUMINUM	
62695			16.00	EA	0.000%	RING 2.500 COMPR CI PS TF WIDE	
40992			4.00	EA	0.000%	RING 2.50 DIA 3PC OIL	
21359			0.00	EA	0.000%	ILLUS COMPR ASSY 6T-276-41B/70	
21360			0.00	EA	0.000%	ILLUS COMPR LAYOUT 6T-276-41B/	
51093	*	STD	1.00	EA	0.000%	PUMPER ASSY MODJD4045 HUR REV	
50928	000	STD	4.00	EA	0.000%	PISTON ASSY, CROSSHEAD 6T-276	
80037			16.00	EA	0.000%	HHCS 5/8-11 X 6 LG GR8	
63580			4.00	EA	0.000%	O-RING 2-156 VITON 90 DURO	
80510			1.00	EA	0.000%	NUT 1/2-20 LEFT-HAND GRADE 8 F	
42550			1.00	EA	0.000%	SHAFT OIL PUMP 4045 REVERSE RO	
91710			1.00	EA	0.000%	CAP 3/8" ID X 1" LG RUBBER	
90294			4.00	EA	0.000%	PLUG 1-1/16-12 STMOR HEX HEAD	
80182			18.00	EA	0.000%	HHCS 1/2-13 X 2-1/4 GR 8	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
51093	000 (CURRENT)	BASE	STANDARD	EA	PUMPER ASSY MODJD4045 HUR REV

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND#	STEP
61258			1.00	EA	0.000%	SEAL 4039/4045 JD REAR REV ROT		
63552			1.00	EA	0.000%	GSKT 4045 JD POWER HEAD		
63551			1.00	EA	0.000%	GSKT JD4045 OIL PAN		
63556			0.00	EA	0.000%	GSKT JD4045D TIMING COVER		
63668			0.00	EA	0.000%	GSKT TIMING COVER 4045D RECON		
63669			1.00	EA	0.000%	GSKT JD4045 OIL COOLER R501428		
63555			1.00	EA	0.000%	GSKT JD4045 WATER PUMP		
62092			1.00	EA	0.000%	SEAL 4039/4045 FRONT CRANKSHAF		
63952			1.00	EA	0.000%	GSKT TIMING COVER J.D.		
63981			1.00	EA	0.000%	VALVE OIL 18mm-1.5 FUMOTO		
64948			3.00	EA	0.000%	PLUG FREEZE 13/32		
64949			4.00	EA	0.000%	PLUG FREEZE 1/2"		
64962			1.00	EA	0.000%	GSKT CRANKCASE BREATHER JD 404		
64963			1.00	EA	0.000%	GSKT LIFTPUMP JD 4045		
64200			1.00	EA	0.000%	ENGINE JD 4045 PUMPER		

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
50928	000 (CURRENT)	BASE	STANDARD	EA	PISTON ASSY, CROSSHEAD 6T-276

LAST USED: 04/21/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
63548			2.00	EA	0.000%	BEARING NEEDLE(INA) PIST. PIN	
63549			4.00	EA	0.000%	RING PIN RETAINER 1-9/16 BORE	
42268	*	STD	1.00	EA	0.000%	PISTON SUB ASSY, X-HEAD 6T-276	
51035	*	STD	1.00	EA	0.000%	ROD CONN/ PIN & SLEEVE ASSY 6T	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21916	000 (CURRENT)	BASE	STANDARD	EA	COUPLING GROUP 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND#	STEP
63886			1.00	EA	0.000%	COUPLING ASSY 6T-276-41B/1000		
42575			1.00	EA	0.000%	ADAPT FLYWHEEL HSG #3-#4		
80426			12.00	EA	0.000%	HHCS M10 X 1.50 X 40 MM LG GR1		
21971			0.00	EA	0.000%	ILLUS FLYWHEEL/HSG 6T-276-41B/		

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21865	000 (CURRENT)	BASE	STANDARD	EA	FRAME GROUP 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
51311	*	STD	1.00	EA	0.000%	FRAME ASSY 7-276-41B	
51277-28	*	STD	1.00	EA	0.000%	UPRIGHT SUPT ASSY	
51211	*	STD	1.00	EA	0.000%	ENGINE STAND FRONT JD 4045	
51252	*	STD	1.00	EA	0.000%	GUARD CRANKSHAFT 6T-276-41B	
51311-19	*	STD	1.00	EA	0.000%	SPACER PUMPER MOUNT	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION		OPTN	TYPE	U/M	DESCRIPTION
21866	000	(CURRENT)	BASE	STANDARD	EA	COOLING GROUP 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
51261-56			1.00	EA	0.000%	BRACKET 2" PIPE MTG	
51136			1.00	EA	0.000%	BRKT, PIPE SUPPORT 1"	
51216			0.00	EA	0.000%	TANK EXPAN RAD 6T276-41 QSB	
51270	*	STD	2.00	EA	0.000%	GUARD ASSY 48" FAN HALF	
51288	*	STD	1.00	EA	0.000%	GUARD ASSY COOLER 7-276-41B	
62606			1.00	EA	0.000%	CLAMP 1.75 OS TUBE	
64922			1.00	EA	0.000%	COOLER PRE 7T/6.7-276-41B	
64923			1.00	EA	0.000%	COOLER 1ST 7T-6.7T276-41B	
64934			0.00	EA	0.000%	FAN SHROUD ASSY 6T-238-41B	
64934-01			2.00	EA	0.000%	SHROUD TOP & BOTTOM	
64934-02			2.00	EA	0.000%	SHROUD SIDE PANEL	
64934-03			2.00	EA	0.000%	COVER SHROUD CLEAN OUT	
64935-01	*	STD	1.00	EA	0.000%	VENTURI W/WELD NUTS	
90411			1.00	EA	0.000%	L 1 NPT 300# STREET	
64080			1.00	EA	0.000%	FAN 42" PUSHER 7-238-41B/1000	
91856-03			1.00	EA	0.000%	TUBING FORMED 2 1/4" RADIATOR	
91856-04			1.00	EA	0.000%	TUBING FORMED 1 3/4"RADIATOR	
91856-05			1.00	EA	0.000%	TUBING FORMED 3" TURBO TO COOL	
91856-06			1.00	EA	0.000%	TUBING FORMED 3" OD COOLER TO	
80582			4.00	EA	0.000%	CLAMP T-BOLT SPRNG 2.94 X 3.25	
91083			2.00	EA	0.000%	HOSE SILICONE 3" ID X 6" LG TU	
120-11563			4.00	EA	0.000%	CLAMP HOSE #32 B32H	
120-14296			4.00	EA	0.000%	CLAMP HOSE #36 B36H	
30134			0.00	EA	0.000%	CAP 7" RADIATOR	
64133			1.00	EA	0.000%	COOLER CHARGE AIR 6.7 & 7T 41B	
51390	*	STD	1.00	EA	0.000%	SUPPORT ASSY COOLANT TUBE	
64175			1.00	EA	0.000%	COOLER RAD 6.7/7-276-41B	
120-20405			2.00	EA	0.000%	CLAMP EXHAUST 3" OD	
91618			10.00	IN	0.000%	HOSE COOLANT 2-1/4" ID BLUE	
51270-04			1.00	EA	0.000%	BRACKET FAN GUARD 7-276-41B	
90839			96.00	IN	0.000%	HOSE 3/4 ID GRAY OIL	
120-11771			2.00	EA	0.000%	CLAMP HOSE #12 - 3/4"	
64214			1.00	EA	0.000%	SIGHT GLASS 1-1/2NPT COOLANT	
125-13125			1.00	EA	0.000%	DRAIN COCK 1/4 NPT RADIATOR	
91354			1.00	EA	0.000%	ADAPT BARB 1 NPTM X 3/4 BRASS	
91627			3.00	EA	0.000%	PLUG 1/4NPT FS HEX HEAD	
80461			4.00	EA	0.000%	CLAMP TORQUE SPRING 2.94-3.25	
90380			1.00	EA	0.000%	ADAPT BARB 3/4 NPTMx3/4 BRASS	
90228			1.00	EA	0.000%	CPLG 3/4 NPT HALF TT	
60888			1.00	EA	0.000%	VALVE BALL 1/4 NPTF7500PSI CS	
62040			1.00	EA	0.000%	VALVE BALL 1/4"NPT 600PSIG	
61097			2.00	EA	0.000%	L 1/4 NPT 90DG CS STREET	
90710			2.00	EA	0.000%	NIPL 1/4 NPT HEX CS	
70096			8.00	IN	0.000%	HOSE VULCO 3 ID	
70134			4.00	IN	0.000%	HOSE VULCO 1-3/4	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21867	000 (CURRENT)	BASE	STANDARD	EA	INST/CTRL GRP 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL/	U/M	SCRAP %	DESCRIPTION	FIND# STEP
90395			1.00	EA	0.000%	ADAPT 1/8 NPTM X #4 JIC CS	
63559			1.00	EA	0.000%	LIGHT HALOGEN FLOOD 6T-276-41B	
63560			1.00	EA	0.000%	BULB 24V HALOGEN 70WATT	
42293	*	STD	1.00	EA	0.000%	BRACKET LIGHT MTG 6T-276-41B	
42294	*	STD	1.00	EA	0.000%	BRACKET, LIGHT MTG 6T-276-41B	
21867-02	*	STD	1.00	EA	0.000%	PANEL SUB-ASSY 7-276-41B	
21867-03	*	STD	1.00	EA	0.000%	NAMEPLATE GRP 7-238-41B	
21867-04	*	STD	1.00	EA	0.000%	BATTERY GROUP 7-276-41B	
21448-04	*	STD	1.00	EA	0.000%	HOSE KIT INSIDE PANEL 6T-276-4	
21448-05	*	STD	1.00	EA	0.000%	HOSE KIT OUTSIDE PANEL 6T-276-	

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21867-02	000 (CURRENT)	BASE	STANDARD	EA	PANEL SUB-ASSY 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
62489			1.00	EA	0.000%	SWITCH, ESD PUSH-BUTTON 40MM	
62215			2.00	EA	0.000%	BREAKER PANEL 15AMP CIRCUIT	
61451			1.00	EA	0.000%	BLOCK, END BRKT TERMINAL	
61450			16.00	EA	0.000%	TERMINAL BLOCK FEED THROUGH	
60328			3.00	EA	0.000%	RELAY MAN RESET TTR 12/24VDC	
61312-03			9.00	EA	0.000%	BLOCK CONTACT	
61958			1.00	EA	0.000%	ENCLOSURE 24x24 W/WINDOW RED	
61883			1.00	EA	0.000%	GAUGE TEMP SWITCH 32-160 16FT	
61344			1.00	EA	0.000%	GAUGE TEMP SWITCH 300-440 16FT	
61581			1.00	EA	0.000%	LAMP 24 VDC 4W .17A INCANDESCE	
61312-01			1.00	EA	0.000%	SWITCH 3 POS RIGHT MOMENTARY	
61938			1.00	EA	0.000%	GAUGE 0-100PSI OIL PRESS SWITC	
60582			12.00	IN	0.000%	RAIL DIN 35MM	
61798			1.00	EA	0.000%	GAUGE 2" SS BZL FUEL LEVEL 24V	
62078			1.00	EA	0.000%	LIGHT UNIT 22-1/2 MM 24VDC	
61312-04			1.00	EA	0.000%	SWITCH, 3 POS CENTER MOMENTARY	
62070			1.00	EA	0.000%	PUSHBUTTON GREEN MOMENTARY	
63088			1.00	EA	0.000%	CONN ROX 9 WIRE	
61455			5.00	EA	0.000%	BLOCK GROUND TERMINAL	
63259			1.00	EA	0.000%	BREAKER PANEL 20 AMP CIRCUIT	
62750			1.00	EA	0.000%	LENS 22-1/2 MM GREEN	
62072			2.00	EA	0.000%	SWITCH, 2-POSITION MAINTAINED	
61200			1.00	EA	0.000%	DIODE 3AMP 40VDC	
42682	*	STD	1.00	EA	0.000%	PANEL, LASER CUT C7-238-41B	
21867-01	*	STD	0.00	EA	0.000%	SCHEM, WIRING 7-238-41B/1000 (	
62430			1.00	EA	0.000%	MONITOR POWERVIEW 101	
62430-02			1.00	EA	0.000%	GAUGE COOLANT PV100	
62430-03			1.00	EA	0.000%	GAUGE OIL PSIG PV100	
62430-06			1.00	EA	0.000%	WIRE PV100 CAN/POWER	
62430-07			3.00	EA	0.000%	WIRE PV100 JUMPER	
62430-08			1.00	EA	0.000%	TERMINATOR PV100 RESISTOR END	
62430-01			1.00	EA	0.000%	GAUGE TACH PV100	
91819			1.00	EA	0.000%	CONN 1/2"NPT CORD STRAIN RELIE	
91907			1.00	EA	0.000%	CONN 1/2"NPT CORD STRAIN RELIE	
62127			1.00	EA	0.000%	SWITCH PRESS 295-3400 PSI	
64066			1.00	EA	0.000%	GAUGE 0-600PSI/0-40 BAR 4" FLA	
64067			1.00	EA	0.000%	GAUGE 0-1500PSI/0-100 BAR 4 FL	
123-67413			1.00	EA	0.000%	SWITCH OIL PRESS SAFETY 15 PSI	
91288			1.00	EA	0.000%	T 1/8 NPTF CS	
90396			1.00	EA	0.000%	L 1/8 NPTM X #4 JIC 90DG CS	
90949			2.00	EA	0.000%	PLUG, GAUGE BLIND 52mm HOLE	
64172			1.00	EA	0.000%	WIRING HARNESS C7-276-41B	
64328			1.00	EA	0.000%	GROUNDING STRAP 8" LG	
102-70754			200.00	IN	0.000%	WIRE #6 AWG RED	
123-70755			3.00	EA	0.000%	TERMINAL 1/4" RING X #6 AWG	
80581			1.00	EA	0.000%	TERMINAL RING 1/2" X # 6	
64340			1.00	EA	0.000%	BREAKER PANEL 100 AMP	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21867-03	000 (CURRENT)	BASE	STANDARD	EA	NAMEPLATE GRP 7-238-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
41938-01			2.00	EA	0.000%	NAMEPLATE 'SUCTION'	
41938-03			2.00	EA	0.000%	NAMEPLATE 'DISCHARGE'	
41938-64			1.00	EA	0.000%	NAMEPLATE 'DOWN/RPM/UP'	
41938-33			1.00	EA	0.000%	NAMEPLATE 'OFF/RUN/BY-PASS'	
41938-26			1.00	EA	0.000%	NAMEPLATE 'START'	
41938-56			1.00	EA	0.000%	NAMEPLATE 'AIR TEMP FAULT'	
41938-36			1.00	EA	0.000%	NAMEPLATE 'EMERGENCY STOP'	
41938-18			1.00	EA	0.000%	NAMEPLATE 'COOLANT'	
41938-15			1.00	EA	0.000%	NAMEPLATE 'PUMPER OIL'	
41938-16			1.00	EA	0.000%	NAMEPLATE 'ENGINE OIL'	
41938-69			1.00	EA	0.000%	NAMEPLATE 'PUMPER FAULT'	
41938-67			1.00	EA	0.000%	NAMEPLATE 'ECM UNSWITCHED'	
41938-68			1.00	EA	0.000%	NAMEPLATE 'ECM SWITCHED'	
41938-65			1.00	EA	0.000%	NAMEPLATE 'MAIN'	
41938-55			1.00	EA	0.000%	NAMEPLATE 'UNLOAD/AUTOLOAD'	
41938-21			1.00	EA	0.000%	NAMEPLATE 'LOAD'	
41938-87			1.00	EA	0.000%	NAMEPLATE 'LIGHT SWITCH'	
41938-93			1.00	EA	0.000%	NAMEPLATE 'SCRUBBER TANK'	
41938-98			1.00	EA	0.000%	NAMEPLATE 'HIGH LIQUID LEVEL'	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21867-04	000 (CURRENT)	BASE	STANDARD	EA	BATTERY GROUP 7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
50638	*	STD	1.00	EA	0.000%	BOX, BATTERY 24VDC SERIES	
123-32013			2.00	EA	0.000%	BATTERY 12V 1125 CCA	
62584			2.00	EA	0.000%	GROMMET RUBBER BATTERY CABLE	
42331			1.00	EA	0.000%	CABLE ASSY BATT NEG BLK 13 1/2	
42329			1.00	EA	0.000%	CABLE ASSY BATT JUMPER 11 1/2"	
42789			1.00	EA	0.000%	CABLE ASSY BATT RED POS 20" LG	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21448-04	000 (CURRENT)	BASE	STANDARD	EA	HOSE KIT INSIDE PANEL 6T-276-4

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL:	U/M	SCRAP %	DESCRIPTION	FIND# STEP
61184			2.00	EA	0.000%	L 1/4 NPTF X #4 JIC 90DG CS	
90938			1.00	EA	0.000%	L 1/8 NPTF X #4 JIC 90DG CS	
90936			3.00	EA	0.000%	UNION #4JIC BULKHEAD CS	
90953			3.00	EA	0.000%	SWIVEL #4JICx#4 ST CRIMP CS	
70243			96.00	IN	0.000%	HOSE #4 T1170-04 CRIMPABLE	
63585			96.00	IN	0.000%	TUBING SHRINK 1/2 HEAT SHRINK	
90939			3.00	EA	0.000%	SWIVEL #4JIC X #4 CS 90DG CRIM	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21448-05	000 (CURRENT)	BASE	STANDARD	EA	HOSE KIT OUTSIDE PANEL 6T-276-

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
90939			7.00	EA	0.000%	SWIVEL #4JIC X #4 CS 90DG CRIM	
90953			3.00	EA	0.000%	SWIVEL #4JICx#4 ST CRIMP CS	
90372			1.00	EA	0.000%	ADAPT 1/4 NPTM X #4 JIC CS	
90360			2.00	EA	0.000%	L 1/4 NPTM X #4 JIC 90DG CS	
70243			420.00	IN	0.000%	HOSE #4 T1170-04 CRIMPABLE	
90791			1.00	EA	0.000%	T 1/4 NPTM MALE RUN CS	
60795			1.00	EA	0.000%	GAUGE 0-2000PSI/BAR 2-1/2 UCL	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21868	000 (CURRENT)	BASE	STANDARD	EA	FUEL GROUP 7T-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
120-25018			0.00	EA	0.000%	SCREW 10-32 X 5/8 RD HD SL ZIN	
90581			1.00	EA	0.000%	ADAPT 1/2 NPTM X #6 JIC CS	
90892			1.00	EA	0.000%	L 1/2 NPTM X #6JIC 90DG CS	
91846			2.00	EA	0.000%	SWIVEL #6 JIC CRIMP STRAIT CS	
91848			4.00	EA	0.000%	SWIVEL #6 JIC CRIMP 90DG CS	
70092			72.00	IN	0.000%	HOSE #213-6 STRATOFLEX	
91597			2.00	EA	0.000%	ADAPT 9/16-18 STM X -6JICM	
91702			5.00	EA	0.000%	PLUG 9/16-18 STMOR CS	
21868-01	*	STD	1.00	EA	0.000%	FUEL TANK SUB ASSY7-276-41B	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21868-01	000 (CURRENT)	BASE	STANDARD	EA	FUEL TANK SUB ASSY7-276-41B

LAST USED: 04/20/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
120-25008281			4.00	EA	0.000%	HHCS 1/2-13 X 3-1/2 (B)	
120-26081			4.00	EA	0.000%	ISOLATOR ENGINE	
120-90070			4.00	EA	0.000%	WASHER M1216, PLATED	
123-25691			1.00	EA	0.000%	FUEL SENDER, 6-24" TANK	
42551			1.00	EA	0.000%	TANK FUEL 6T-276-41B QSB	
60563			1.00	EA	0.000%	VALVE BALL 1/2 NPT FEMALE	
61475			1.00	EA	0.000%	CAP FUEL FILLNECK 3" NPTF	
90329			4.00	EA	0.000%	PLUG 1/2 STEEL HEX HEAD	
90581			1.00	EA	0.000%	ADAPT 1/2 NPTM X #6 JIC CS	
90707			1.00	EA	0.000%	NIPL 1/2 NPT HEX CS	
90892			1.00	EA	0.000%	L 1/2 NPTM X #6JIC 90DG CS	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21869	000 (CURRENT)	BASE	STANDARD	EA	AIR CLEANER GROUP 7-276-41B

LAST USED: 04/22/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
120-25333			1.00	EA	0.000%	L RUBBER 5 X 4" 90 DG	
61525			1.00	EA	0.000%	L RUBBER 5" 90 DG	
1615 9464 02			1.00	EA	0.000%	AIR CLEANER EUROPICLON 700 ATL	
2236 2062 04			1.00	EA	0.000%	RAIN CAP EUROPICLON 700 AIR CL	
2236 2062 05			2.00	EA	0.000%	BAND MNTG EUROPICLON 700 AIR C	
90427			3.00	EA	0.000%	CLAMP HOSE #88	
2236 2050 98	*	STD	1.00	EA	0.000%	TUBE ASSY FORMED AIR INTAKE B7	
120-16803			1.00	EA	0.000%	CLAMP HOSE #72 4"	
150-90180			1.00	EA	0.000%	INDICATOR AIR FLTR 25" RESTRIC	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21870	000 (CURRENT)	BASE	STANDARD	EA	EXHAUST GROUP 7-276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
51176	*	STD	1.00	EA	0.000%	EXH ASSY 6T-276-41QSB	
60960			1.00	EA	0.000%	RAIN CAP 4" OD	
91856-08			1.00	EA	0.000%	TUBING FORMED EXHAUST 4" OD 16	
60365			1.00	EA	0.000%	CLAMP EXHAUST 4" OD	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21905	000 (CURRENT)	BASE	STANDARD	EA	PIPING GROUP SUCTION 7-276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
21905-01	*	STD	1.00	EA	0.000%	SCRUBBER ASSY PRE PAINT C7 & 6	
21905-02	*	STD	1.00	EA	0.000%	SCRUBBER ASSY POST PAINT C7 &	
42658			1.00	EA	0.000%	BRACKET PIPE SUPT 6T-238-41B	
42656			1.00	EA	0.000%	BRACKET PIPE SUPT 3"	
90797			4.00	EA	0.000%	CPLG ASSY VICTAULIC 3" #77 "O"	
90926			2.00	EA	0.000%	CLAMP 3" PIPE SUPT ALUM HD	
51321	*	STD	1.00	EA	0.000%	MANIFOLD SUCTION 276-41B 4INTO	
91856-01			1.00	EA	0.000%	PIPE FORMED 3" SCH40 CLR TO SE	
91856-02			1.00	EA	0.000%	PIPE FORMED INLET 3" SCH40 SEP	
61731			1.00	EA	0.000%	VALVE SAFETY REL 450PSIG 27645	
90025			1.00	EA	0.000%	L 1-1/2 NPT 150# STREET	
90953			2.00	EA	0.000%	SWIVEL #4JICx#4 ST CRIMP CS	
70243			15.00	IN	0.000%	HOSE #4 T1170-04 CRIMPABLE	
60811			1.00	EA	0.000%	L 1/2 NPTM X #4JIC 90DG CS	
91627			1.00	EA	0.000%	PLUG 1/4NPT FS HEX HEAD	
91902-08			1.00	EA	0.000%	PIPE VICT 3 SCH80 X 3.75"STUB	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21905-01	000 (CURRENT)	BASE	STANDARD	EA	SCRUBBER ASSY PRE PAINT C7 & 6

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
64946			1.00	EA	0.000%	TANK SCRUBBER INLET	
90329			1.00	EA	0.000%	PLUG 1/2 STEEL HEX HEAD	
122-13781			1.00	EA	0.000%	PLUG 1 IN HEX HEAD STEEL	
91627			1.00	EA	0.000%	PLUG 1/4NPT FS HEX HEAD	
90339			1.00	EA	0.000%	PLUG 2"NPT CSK STEEL	
91880			2.00	EA	0.000%	BSHG 4" X 3" NPT FS 2000#	
122-33591			1.00	EA	0.000%	NIPL VICT 3 NPT SCH80 X 6"LG	
60736			1.00	EA	0.000%	L 1 NPT CS 90DG STREET	
122-15074			1.00	EA	0.000%	NIPL 1 NPT SCH40 X 8"LG BLK	
90455			1.00	EA	0.000%	BSHG 1 X 1/2 2000# FS	
63717			1.00	EA	0.000%	L VICT 3" NPT X #18 90 DG STRE	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21905-02	000 (CURRENT)	BASE	STANDARD	EA	SCRUBBER ASSY POST PAINT C7 &

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL'	U/M	SCRAP %	DESCRIPTION	FIND# STEP
61470			1.00	EA	0.000%	THERMOWELL MURPHY SDB 5000PSIG	
62894			1.00	EA	0.000%	SIGHT GLASS 2" OIL LEVEL	
125-13761			1.00	EA	0.000%	VALVE BALL 1"NPT SERVICE	
21905-04	*	STD	1.00	EA	0.000%	REGULATOR SUB ASSY SCRUBBER	
21905-03	*	STD	1.00	EA	0.000%	PILOT VALVE SUB ASSY SCRUBBER	
123-67302			1.00	EA	0.000%	SWITCH LIQUID LEVEL 2" NPT	
90707			1.00	EA	0.000%	NIPL 1/2 NPT HEX CS	
62707			1.00	EA	0.000%	CONDUIT BODY LB 1/2" W/COVER&G	
91907			1.00	EA	0.000%	CONN 1/2"NPT CORD STRAIN RELIE	
91819			1.00	EA	0.000%	CONN 1/2"NPT CORD STRAIN RELIE	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21905-03	000 (CURRENT)	BASE	STANDARD	EA	PILOT VALVE SUB ASSY SCRUBBER

LAST USED: 04/01/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
60736			1.00	EA	0.000%	L 1 NPT CS 90DG STREET	
91160			1.00	EA	0.000%	NIPL 1 NPT HEX CS X 1/2 NPT	
60938			1.00	EA	0.000%	VALVE PILOT NC 1/2 2-WAY OPER	
90360			1.00	EA	0.000%	L 1/4 NPTM X #4 JIC 90DG CS	
60782			1.00	EA	0.000%	AIR MUFFLER 1/2"	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/:

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21905-04	000 (CURRENT)	BASE	STANDARD	EA	REGULATOR SUB ASSY SCRUBBER

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
64942			1.00	EA	0.000%	VALVE BACK PRESS REGULATOR VEN	
91160			1.00	EA	0.000%	NIPL 1 NPT HEX CS X 1/2 NPT	
60811			1.00	EA	0.000%	L 1/2 NPTM X #4JIC 90DG CS	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21906	000 (CURRENT)	BASE	STANDARD	EA	PIPING GROUP IST STG 7-276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND#	STEP
51322	*	STD	1.00	EA	0.000%	MANIFOLD DISCH 276-41B 4INTO1		
51261-56			2.00	EA	0.000%	BRACKET 2" PIPE MTG		
61334			1.00	EA	0.000%	FLANGE 2.0 SPLIT HALVES W/KIT		
62731			1.00	EA	0.000%	VALVE SAFETY REL 1200PSIG 2443		
90411			1.00	EA	0.000%	L 1 NPT 300# STREET		
90515			1.00	EA	0.000%	CPLG ASSY VICTAULIC 2" # 77/"O		
90876			2.00	EA	0.000%	CLAMP 2" PIPE SUPT ALUM HD		
91177			1.00	EA	0.000%	FLANGE 2.0 SW/O-RG HEAD SP		
91649			1.00	EA	0.000%	THREADOLET 2 X 1 NPT 3000#		
91856			1.00	EA	0.000%	PIPE FORMED 2" SCH40 DSCG TO C		
92254			1.00	EA	0.000%	PIPE VICT 2 SCH80 X 4"LG STUB		
61069			1.00	EA	0.000%	THERMOWELL MURPHY A 4000PSIG		
91627			1.00	EA	0.000%	PLUG 1/4NPT FS HEX HEAD		

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21875	000 (CURRENT)	BASE	STANDARD	EA	COOLANT CONNECT 7-276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
90945			9.00	EA	0.000%	SWIVEL, #4x1/4 CS HOSE 90 PUSH	
90551			12.00	EA	0.000%	SWIVEL, #4x1/4HOSE BRASS ST PU	
125-13125			1.00	EA	0.000%	DRAIN COCK 1/4 NPT RADIATOR	
90852			1.00	EA	0.000%	T 1/8 NPTM X #4JIC CS MB	
90396			1.00	EA	0.000%	L 1/8 NPTM X #4 JIC 90DG CS	
70044			100.00	IN	0.000%	HOSE COOLANT 3/4"ID	
90943			76.00	IN	0.000%	HOSE 1/4"ID GRAY OIL (PUSHLOK)	
120-11771			4.00	EA	0.000%	CLAMP HOSE #12 - 3/4"	
90791			1.00	EA	0.000%	T 1/4 NPTM MALE RUN CS	
21711-01	*	STD	1.00	EA	0.000%	COOLANT MANIFOLD SUB-ASSY	
91591			1.00	EA	0.000%	ADAPT BARB L 3/4 NPTM X 3/4 HO	
90372			9.00	EA	0.000%	ADAPT 1/4 NPTM X #4 JIC CS	
90395			1.00	EA	0.000%	ADAPT 1/8 NPTM X #4 JIC CS	
120-67742			4.00	EA	0.000%	CLAMP HOSE #16 1"	
90830			3.00	EA	0.000%	ADAPT BARB 1 NPTM X 1 BRASS	
90769			2.00	EA	0.000%	ADAPT BARB 3/4 NPTM X 1 B	
70085			6.00	IN	0.000%	HOSE HEATER 1"ID BLK	
122-13358			1.00	EA	0.000%	T 1 BLK 150#	
122-13357			1.00	EA	0.000%	NIPL 1 NPT SCH40 X 3" LG BLK	
122-13355			1.00	EA	0.000%	L 1 NPT 150# 90 DEG BLK	
90134			1.00	EA	0.000%	ADAPT BARB L 1/2 NPTMx3/4 90DG	

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SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21711-01	000 (CURRENT)	BASE	STANDARD	EA	COOLANT MANIFOLD SUB-ASSY

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
51295	*	STD	1.00	EA	0.000%	MANIFOLD ASSY COOLANT 4CYL	
91234			2.00	EA	0.000%	CAP 1" NPTF 150# PIPE	
91354			4.00	EA	0.000%	ADAPT BARB 1 NPTM X 3/4 BRASS	
64013			1.00	EA	0.000%	VALVE COOLANT RELIEF 0-30 PSIG	
90372			9.00	EA	0.000%	ADAPT 1/4 NPTM X #4 JIC CS	
122-13358			2.00	EA	0.000%	T 1 BLK 150#	
91646			1.00	EA	0.000%	CAP -4 JIC CS END	
62066			1.00	EA	0.000%	T 1/4 NPTMx#4JIC MALE RUN CS	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21876	000 (CURRENT)	BASE	STANDARD	EA	AUTO UNLOAD GRP 276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
21591-01	*	STD	1.00	EA	0.000%	FINITE FILTER SUB ASSY 4T-276-	
21876-01	*	STD	1.00	EA	0.000%	REGULATOR SUB ASSY 4T-276-41B	
70243			144.00	IN	0.000%	HOSE #4 T1170-04 CRIMPABLE	
90372			3.00	EA	0.000%	ADAPT 1/4 NPTM X #4 JIC CS	
90939			3.00	EA	0.000%	SWIVEL #4JIC X #4 CS 90DG CRIM	
90953			1.00	EA	0.000%	SWIVEL #4JICx#4 ST CRIMP CS	
120-11771			4.00	EA	0.000%	CLAMP HOSE #12 - 3/4"	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21591-01	000 (CURRENT)	BASE	STANDARD	EA	FINITE FILTER SUB ASSY 4T-276-

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL'	U/M	SCRAP %	DESCRIPTION	FIND# STEP
63869			1.00	EA	0.000%	FILTER FINITE HN1L-100WSUN	
42596	*	STD	1.00	EA	0.000%	BRKT COALESCING FILTER	
90360			1.00	EA	0.000%	L 1/4 NPTM X #4 JIC 90DG CS	
62040			1.00	EA	0.000%	VALVE BALL 1/4"NPT 600PSIG	
90838			1.00	EA	0.000%	NIPL 1/4 NPT HEX CS X 1/8 NPTM	
62067			1.00	EA	0.000%	T 1/4 NPTMx#4JIC CS MALE BRANC	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21876-01	000 (CURRENT)	BASE	STANDARD	EA	REGULATOR SUB ASSY 4T-276-41B

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
61853			1.00	EA	0.000%	GAUGE 0-100PSI/BAR UCLAMP	
50917	*	STD	1.00	EA	0.000%	BRKT ASSY, ASCO/REG MOUNT	
91675			1.00	EA	0.000%	NIPL 1/4 NPT XS 1-1/2" LG	
90503			1.00	EA	0.000%	PLUG 1/4 NPT CSK STEEL	
90360			1.00	EA	0.000%	L 1/4 NPTM X #4 JIC 90DG CS	
90372			1.00	EA	0.000%	ADAPT 1/4 NPTM X #4 JIC CS	
62512			1.00	EA	0.000%	REGULATOR AIR 3000#IN/125#OUT	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21898	000 (CURRENT)	BASE	STANDARD	EA	KIT CRANK CASE VENT 6.7-276-41

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
61488			1.00	EA	0.000%	BREATHER, 1" "BLACK" CRANKCASE	
90835			1.00	EA	0.000%	ADAPT BARB L 1 NPTM X 1 90DG B	
120-67742			3.00	EA	0.000%	CLAMP HOSE #16 1"	
70085			90.00	IN	0.000%	HOSE HEATER 1"ID BLK	
90830			1.00	EA	0.000%	ADAPT BARB 1 NPTM X 1 BRASS	
42517	*	STD	1.00	EA	0.000%	PLATE, CRANKCASE CANNISTER	
90150			1.00	EA	0.000%	BAND CLAMP MUFFLER MTG 6.62 DI	
80107			4.00	EA	0.000%	WASHER 3/8 SPLIT LOCK	
80105			6.00	EA	0.000%	WASHER 3/8 FLAT SAE ZINC	
80099			2.00	EA	0.000%	NUT 3/8-16 HEX GRADE 8	
80085			4.00	EA	0.000%	HHCS 3/8-16 X 1 GR8	
80098			1.00	EA	0.000%	NUT 1/4-20 HEX ZINC	
120-25004162			1.00	EA	0.000%	HHCS 1/4-20 X 2 GR 5 ZINC	

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
21907	000 (CURRENT)	BASE	STANDARD	EA	FINISH GRP 7T-276-41B-1000

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
127-32109			4.00	EA	0.000%	DECAL WARNING MOVING PARTS	
40293			1.00	EA	0.000%	DECAL MADE IN U.S.A.	
40297			2.00	EA	0.000%	DECAL RELIEF VALVE CAUTION	
40459			1.00	EA	0.000%	DECAL AIR NOT SUITABLE	
61006			1.00	EA	0.000%	DECAL DIESEL FUEL	
63128			1.00	EA	0.000%	DECAL SCRUBBER/SEPARATOR DRAIN	
127-32121			1.00	EA	0.000%	DECAL NEVER OPEN HOT	
63144			1.00	EA	0.000%	DECAL 24VDC NEGATIVE GROUND	
120-16257			4.00	EA	0.000%	POP RIVET 1/8 X 1/4	
64064			1.00	EA	0.000%	DECAL 350PSIG-1000-PSIG-2400SC	
63509			1.00	EA	0.000%	DECAL OPERATING 6T-276-41B	
127-21962			1.00	EA	0.000%	DECAL DRAIN DAILY	
41767			1.00	EA	0.000%	DECAL DISCHARGE VALVE WHITE	
91537			1.00	EA	0.000%	PLUG 2" NPT PVC DWV	
91538			1.00	EA	0.000%	PLUG 3" NPT PVC DWV	
63608			1.00	EA	0.000%	DECAL SCRUBBER TANK OIL LEVEL	
40573W			1.00	EA	0.000%	DECAL INLET VALVE WHITE	
40575W			1.00	EA	0.000%	DECAL BYPASS VALVE WHITE	
63525			1.00	EA	0.000%	DECAL BOOSTER BY-PASS VALVE	
122-69636			2.00	EA	0.000%	PLUG 3/4" NPT PVC	
64235			1.00	EA	0.000%	DECAL MIN COMP RATIO SINGLE ST	
0090 1125 01			3.00	EA	0.000%	DECAL ATLAS COPCO WHITE	
2236 2060 80			1.00	EA	0.000%	DECAL SERVICE PACK 7T-276-41B	
2236 2060 77			1.00	EA	0.000%	DECAL PARCOOL EG	
2236 2060 78			1.00	EA	0.000%	DECAL PAROIL E (MINERAL)	
2236 2060 79			1.00	EA	0.000%	DECAL PAROIL EXTREME (SYNTHETI	
2236 2061 37			1.00	EA	0.000%	DATA PLATE COMPRESSOR ID	
2236 2061 59			2.00	EA	0.000%	PLATE DECAL ATLAS SMALL	
2236 2061 65			1.00	EA	0.000%	DECAL HURRICANE B7-41	
2236 2061 61			2.00	EA	0.000%	DECAL WWW.ATLASCOPCO.COM WHITE	
2236 2061 81			1.00	EA	0.000%	DECAL MANUFACTURED BY ATLAS CO	
2236 2060 07			1.00	EA	0.000%	DECAL FLUID SPEC ENGINE OIL	
2236 2060 08			1.00	EA	0.000%	DECAL FLUID SPEC PUMPER OIL	
2236 2060 75			1.00	EA	0.000%	DECAL PAROIL M	
2236 2060 77			1.00	EA	0.000%	DECAL PARCOOL EG	
2236 2060 10			1.00	EA	0.000%	DECAL FLUID SPEC ENGINE COOLAN	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
22061	000 (CURRENT)	BASE	STANDARD	EA	BYPASS GRP BYPASS/BCKPRSSR REG

LAST USED: 04/23/09 YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL'	U/M	SCRAP %	DESCRIPTION	FIND# STEP
30252			1.00	EA	0.000%	O-RING 2-219 VITON 90 DURO	
42576			1.00	EA	0.000%	BRKT, PIPE DISCH 4T-276	
50132-02			1.00	EA	0.000%	PIPE VICT 2 SCH80 X 2.62"LG	
51383	*	STD	1.00	EA	0.000%	PIPE ASSY 2" BYPASS B.P. REG	
61097			1.00	EA	0.000%	L 1/4 NPT 90DG CS STREET	
61334			2.00	EA	0.000%	FLANGE 2.0 SPLIT HALVES W/KIT	
61338			1.00	EA	0.000%	FLANGE 1.0 4 BOLT SW/FF PIPE S	
60888			1.00	EA	0.000%	VALVE BALL 1/4 NPTF7500PSI CS	
62314			1.00	EA	0.000%	L 3" NPT 300# 90DG	
62709			1.00	EA	0.000%	SOCKOLET 3 X 2 3000#	
63704			1.00	EA	0.000%	REGULATOR BACK PRESS 2" BOOSTE	
63746			1.00	EA	0.000%	VALVE CO-AX 1" EXTERNAL CONTRO	
90088			1.00	EA	0.000%	VALVE BALL 2" 1500# STD PORT	
90349-0016	*	STD	1.00	EA	0.000%	PIPE CUT 1 SCH80 X 1.62"LG	
90515			1.00	EA	0.000%	CPLG ASSY VICTAULIC 2" # 77/"O	
90531-01	*	STD	1.00	EA	0.000%	T 2" NPT MODIFIED	
90537			1.00	EA	0.000%	NIPL 1 NPT SCH80 X 2" LG	
90710			1.00	EA	0.000%	NIPL 1/4 NPT HEX CS	
90797			1.00	EA	0.000%	CPLG ASSY VICTAULIC 3" #77 "O"	
90876			1.00	EA	0.000%	CLAMP 2" PIPE SUPT ALUM HD	
90926			1.00	EA	0.000%	CLAMP 3" PIPE SUPT ALUM HD	
90954			1.00	EA	0.000%	L 2 NPT 2000# STREET	
91464			1.00	EA	0.000%	FLANGE 1.00 4-BOLT NPTF/O-RG P	
91565			1.00	EA	0.000%	CPLG ASSY VICTAULIC 1"	
91606			1.00	EA	0.000%	NIPL VICT 3"NPTM SCH80 X 9"LG	
91700			2.00	EA	0.000%	NIPL 2 NPT CLOSE XXS A-106B	
2236 2061 52			1.00	EA	0.000%	NIPL 3 NPT SCH 80 X 12.5" LG	
91884			1.00	EA	0.000%	NIPL VICT 1 NPT SCH80 2.50"LG	
91885	*	STD	1.00	EA	0.000%	PIPE VICT 1 SCH80 X 3" LG	
91904			1.00	EA	0.000%	FLANGE 2.0 4 BOLT 90 NPTF/FF	
91923			1.00	EA	0.000%	NIPL VICT 2 NPT SCH80 X 2.62"L	
2236 2040 01			1.00	EA	0.000%	BRKT 3" PIPE MOUNTING	
2236 2060 45			1.00	EA	0.000%	VALVE BALL 3 NPT 500 PSI HD fa	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE: 04/2

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
10206-01	000 (CURRENT)	BASE	STANDARD	EA	SPARE PARTS 7-276-41B

LAST USED: YIELD%: 100.000% MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# STEP
61396			4.00	EA	0.000%	O-RING 2-225 VITON 90 DURO	
60056			4.00	EA	0.000%	O-RING 2-233 VITON 90 VITON	
61395			4.00	EA	0.000%	O-RING 2-034 VITON 90 DURO	
61392			8.00	EA	0.000%	O-RING 2-043 VITON 90 DURO	
60048			4.00	EA	0.000%	O-RING 2-154 VITON 90 DURO	
41643			2.00	EA	0.000%	VALVE COMPR BOOSTER	
62695			0.00	EA	0.000%	RING 2.500 COMPR CI PS TF WIDE	
40992			0.00	EA	0.000%	RING 2.50 DIA 3PC OIL	
21359			1.00	EA	0.000%	ILLUS COMPR ASSY 6T-276-41B/70	
21360			1.00	EA	0.000%	ILLUS COMPR LAYOUT 6T-276-41B/	
63580			4.00	EA	0.000%	O-RING 2-156 VITON 90 DURO	
63304			1.00	EA	0.000%	BELT(SET) CAT 3126	
62208-01			4.00	EA	0.000%	O-RING 3" SPLIT FLANGE	
61731			1.00	EA	0.000%	VALVE SAFETY REL 450PSIG 2764S	
62917			2.00	EA	0.000%	O-RING 2-228 VITON 90 DURO	
61563			1.00	EA	0.000%	VALVE SAFETY REL 1200PSIG 2443	
63568-01			1.00	EA	0.000%	KIT SEAL SPRINGER CO-AX VALVE	
30252			3.00	EA	0.000%	O-RING 2-219 VITON 90 DURO	
62127			1.00	EA	0.000%	SWITCH PRESS 295-3400 PSI	
62127-01			1.00	EA	0.000%	SWITCH MICRO FOR BARKSDALE	
62489			1.00	EA	0.000%	SWITCH, ESD PUSH-BUTTON 40MM	
62215			2.00	EA	0.000%	BREAKER PANEL 15AMP CIRCUIT	
60328			2.00	EA	0.000%	RELAY MAN RESET TTR 12/24VDC	
61312-03			4.00	EA	0.000%	BLOCK CONTACT	
61344			1.00	EA	0.000%	GAUGE TEMP SWITCH 300-440 16FT	
61312-01			1.00	EA	0.000%	SWITCH 3 POS RIGHT MOMENTARY	
61938			1.00	EA	0.000%	GAUGE 0-100PSI OIL PRESS SWITC	
61312-04			2.00	EA	0.000%	SWITCH, 3 POS CENTER MOMENTARY	
62070			1.00	EA	0.000%	PUSHBUTTON GREEN MOMENTARY	
63259			1.00	EA	0.000%	BREAKER PANEL 20 AMP CIRCUIT	
62072			1.00	EA	0.000%	SWITCH, 2-POSITION MAINTAINED	
21447			1.00	EA	0.000%	SCHEM, WIRING 6T-276-41B/1000	
90798			2.00	EA	0.000%	GSKT VICTAULIC 3" #77 'O'	
61883			1.00	EA	0.000%	GAUGE TEMP SWITCH 32-160 16FT	
61581			4.00	EA	0.000%	LAMP 24 VDC 4W .17A INCANDESCE	
63259			1.00	EA	0.000%	BREAKER PANEL 20 AMP CIRCUIT	
61760-01			0.00	EA	0.000%	ELEMENT A/C 13" PRIMARY	
61760-02			0.00	EA	0.000%	ELEMENT A/C 13" SAFETY	
64066			1.00	EA	0.000%	GAUGE 0-600PSI/0-40 BAR 4" FLA	
64067			1.00	EA	0.000%	GAUGE 0-1500PSI/0-100 BAR 4 FL	
2236 2060 45			1.00	EA	0.000%	VALVE BALL 3 NPT 500 PSI HD fs	
90088			1.00	EA	0.000%	VALVE BALL 2" 1500# STD PORT	
64942			1.00	EA	0.000%	VALVE BACK PRESS REGULATOR VEN	
60938			1.00	EA	0.000%	VALVE PILOT NC 1/2 2-WAY OPER	
63869-01			0.00	EA	0.000%	ELEMENT FINITE	
63746			0.00	EA	0.000%	VALVE CO-AX 1" EXTERNAL CONTRO	
63746-01			1.00	EA	0.000%	KIT COAX VALVE	
63746-02			1.00	EA	0.000%	CO-AX PILOT VALVE	
63746-03			1.00	EA	0.000%	COIL SEITZ PILOT VALVE 24V DC	
63746-04			1.00	EA	0.000%	FLOW CONTROL/EXHAUST	
63704			1.00	EA	0.000%	REGULATOR BACK PRESS 2" BOOSTE	
64340			1.00	EA	0.000%	BREAKER PANEL 100 AMP	
2236 2000 04	*	STD	0.00	EA	0.000%	SERVICE PACK 250 HRS 7T-276-41	
2236 2000 05	*	STD	0.00	EA	0.000%	SERVICE PACK 500 HRS 7T-276-41	
2236 2000 06	*	STD	0.00	EA	0.000%	SERVICE PACK 1000 HRS 7T-276-4	
2236 2000 07	*	STD	0.00	EA	0.000%	SERVICE PACK 2000 HRS 7T-276-4	

SINGLE-LEVEL BILL OF MATERIALS REPORT

WITH PHANTOM BLOW THROUGH - EFFECTIVE DATE:

BILL	REVISION	OPTN	TYPE	U/M	DESCRIPTION
10206-01	000 (CURRENT)	BASE	STANDARD	EACH	SPARE PARTS 7-276-41B

LAST USED | YIELD%: 100.000% | MAX LOT SIZE: 0

COMPONENT	REV	TYP	QTY/BILL	U/M	SCRAP %	DESCRIPTION	FIND# S
61396			4.00	EA	0.000%	O-RING 2-225 VITON 90 DURO	
60056			4.00	EA	0.000%	O-RING 2-233 VITON 90 VITON	
61395			4.00	EA	0.000%	O-RING 2-034 VITON 90 DURO	
61392			8.00	EA	0.000%	O-RING 2-043 VITON 90 DURO	
60048			4.00	EA	0.000%	O-RING 2-154 VITON 90 DURO	
41643			4.00	EA	0.000%	VALVE COMPR BOOSTER	
62695			16.00	EACH	0.000%	RING 2.500 COMPR CIPS TF WIDE	
40992			4.00	EA	0.000%	RING 2.50 DIA 3PC OIL	
21359			1.00	EA	0.000%	ILLUS COMPR ASSY 6T-276-41B/70	
21360			1.00	EA	0.000%	ILLUS COMPR LAYOUT 6T-276-41B/	
63580			4.00	EACH	0.000%	O-RING 2-156 VITON 90 DURO	
63304			1.00	EACH	0.000%	BELT(SET) CAT 3126	
62208-01			4.00	EACH	0.000%	O-RING 3" SPLIT FLANGE	
61731			1.00	EA	0.000%	VALVE SAFETY REL 450PSIG 2764S	
61856			1.00	EA	0.000%	VALVE CHECK 2"MNPT	
62917			2.00	EA	0.000%	O-RING 2-228 VITON 90 DURO	
61563			1.00	EA	0.000%	VALVE SAFETY REL 1200PSIG 2443	
92238	*	STD	1.00	EACH	0.000%	HOSE KIT 6T-276-41B/700 (2275S	
63568-01			1.00	EACH	0.000%	KIT SEAL SPRINGER CO-AX VALVE	
30252			3.00	EA	0.000%	O-RING 2-219 VITON 90 DURO	
62127			1.00	EA	0.000%	SWITCH PRESS 295-3400 PSI	
62489			1.00	EA	0.000%	SWITCH, ESD PUSH-BUTTON 40MM	
62215			2.00	EA	0.000%	BREAKER PANEL 15AMP CIRCUIT	
60328			2.00	EA	0.000%	RELAY MAN RESET TTR 12/24VDC	
61312-03			4.00	EA	0.000%	BLOCK CONTACT	
61344			1.00	EA	0.000%	GAUGE TEMP SWITCH 300-440 16FT	
61312-01			1.00	EA	0.000%	SWITCH 3 POS RIGHT MOMENTARY	
61938			1.00	EA	0.000%	GAUGE 0-100PSI OIL PRESS SWITC	
61312-04			2.00	EA	0.000%	SWITCH, 3 POS CENTER MOMENTARY	
62070			1.00	EA	0.000%	PUSHBUTTON, GREEN MOMENTARY	
63259			1.00	EACH	0.000%	BREAKER PANEL 20 AMP CIRCUIT	
62072			1.00	EA	0.000%	SWITCH, 2-POSITION MAINTAINED	
62679			1.00	EACH	0.000%	BREAKER PANEL 70AMP CIRCUIT	
21447			1.00	EACH	0.000%	SCHEM. WIRING 6T-276-41B/1000	
90798			2.00	EA	0.000%	GSKT VICTAULIC 3" #77 'O'	
61883			1.00	EA	0.000%	GAUGE TEMP SWITCH 32-160 16FT	
61581			4.00	EA	0.000%	LAMP 24 VDC 4W .17A INCANDESCE	
63259			1.00	EACH	0.000%	BREAKER PANEL 20 AMP CIRCUIT	
63336			1.00	EACH	0.000%	GAUGE 0-600 PSIG 4 FLANGE PANE	
63337			1.00	EACH	0.000%	GAUGE 0-1500PSIG 4 FLANGE PANE	
61035			1.00	EA	0.000%	VALVE BALL 3" NPT	
90088			1.00	EA	0.000%	VALVE BALL 2" 1500# STD PORT	
64942			1.00	EACH	0.000%	VALVE BACK PRESS REGULATOR VEN	
60938			1.00	EA	0.000%	VALVE PILOT NC 1/2 2-WAY OPER	

ATLAS COPCO HURRICANE LLC
WARRANTY POLICY

The Warranty. Atlas Copco Hurricane LLC products are warranted to be free from defects in workmanship and material, under normal use and service, for the period or hours of operation stated below, whichever shall occur first, from the date in service to the first purchaser (beginning at machine startup if startup occurs within six (6) months after shipment from the Atlas Copco Hurricane LLC factory and registration card is returned within ten (10) days after startup or thirty (30) days after date of invoice if registration card not returned).

WARRANTY DURATION

PRODUCT	HOURS	MONTHS
Diesel Rotary, Gas Gathering Compressors	2,000	12
Multi-Stage & Booster Reciprocating Compressors	2,000	12
Crankshaft, Crankcase Casting, Connecting Rods, Crossheads and Compressor Head Castings		36
Rotary Air Ends	2,000	24
Parts and Exchange Valves	Unlimited	3

Hurricane's Responsibilities. With respect to a product failure, which occurs as the result of a defect in workmanship or material during the warranty period, which is not otherwise excluded by this warranty, Atlas Copco Hurricane LLC shall have the following responsibilities:

Rotary, Gas Gathering Compressors: Atlas Copco Hurricane LLC will pay for parts and labor during the warranty period.

Multi-Stage Reciprocating and **Booster Reciprocating Compressors:** Atlas Copco Hurricane LLC will pay for replacement or repair of parts and labor within the first 90 days from date placed in service and parts only for the remainder of the warranty period.

Rotary Air Ends: Failures will be replaced with new or exchange air ends. When an air end (either new or exchange) fails under warranty, it must be returned to the factory in its failed state. If the air end is disassembled, the warranty is void. The parts covered by this plan include all components of the air end, with the exception of the drive coupling, air intake housing assembly and discharge housing assembly, which are not included.

Parts and **Exchange Valves:** Atlas Copco Hurricane LLC will pay for the replacement or repair of parts or valves only.

Repairs: Repairs or replacement parts are warranted for 90 days from the date that the repaired or replaced products are shipped or installed. This warranty does not cover labor costs and other contingent expenses for the diagnosis of defects or for removal and reinstallation of the equipment.

Customer Responsibilities: The customer is responsible for the operation and maintenance of the product as required by good industry practice and as specified in the manual supplied by Hurricane.

In order to make a claim for warranty service, the customer must notify Atlas Copco Hurricane LLC or its authorized dealer of the defect within the warranty period; return the product or part thereof to Atlas Copco Hurricane LLC for inspection; pay all shipping charges as required.

The customer is responsible for communication expenses, meals, lodging, travel, access to the compressor, downtime expenses, all business costs and losses and similar costs incurred resulting from any warrantable failure.

The warranty period shall be established by the date placed in service by the first user as reported by the warranty registration card mailed to Atlas Copco Hurricane LLC by the owner or distributor. If a registration card is not on file, the invoice date will establish the start of the warranty period.

Limitations: Except as otherwise stated, this warranty is limited to the repair or replacement of parts at distributor net cost if, upon inspection, such parts are found to be defective in material or workmanship. When requested, allegedly defective parts shall be shipped prepaid to the factory for Atlas Copco Hurricane LLC inspection. Before parts are returned to the factory for warranty, Hurricane's warranty claim form must be filled out and sent to Hurricane, within 30 days from date of failure, for consideration and instructions regarding further disposition. Claims filed after this 30-day time period will not be considered. After Atlas Copco Hurricane LLC reviews the claim, a determination will be made as to whether the parts should be sent back for evaluation. Warranted parts will be repaired or replaced to the initial user during normal working hours at a Atlas Copco Hurricane LLC Distributor authorized to sell the type of equipment involved or other establishment authorized by Atlas Copco Hurricane LLC.

This warranty does not apply to (1) any compressor unit that shall have been subject to use outside the recommended rpm operating range, chemical or abrasive action, negligence, accident or other misuse, (2) any compressor or part that shall have been repaired or altered by anyone who is not an authorized Atlas Copco Hurricane LLC distributor if, in the judgement of Atlas Copco Hurricane LLC, its performance and reliability are adversely affected, (3) any part of a compressor unit improperly applied or installed, (4) failures in any way resulting from use of parts not manufactured or approved by Atlas Copco Hurricane LLC or (5) normal maintenance services including, but not limited to, tune-up and repair or replacement of oil, filters and belts.

Atlas Copco Hurricane LLC shall not be liable for loss of time to the user while the compressor or other equipment is out of commission or for special, incidental or consequential damage arising for any alleged breach of warranty.

Engines, electrical equipment, gauges, valves, clutches, radiators, coolers, CNG dispensers, gas dryers and other items not manufactured by Atlas Copco Hurricane LLC which are warranted by their respective manufacturers, are not warranted by Hurricane.

Labor charges are paid based on Repair Time Standards and Rates established by Hurricane.

All implied warranties, if any, applicable to consumer products terminate concurrently with the expiration of the express warranties applied to such product.

There are no other warranties, expressed or implied, including warranties for merchantability or fitness for a particular purpose by Atlas Copco Hurricane LLC except the warranty against defects in material and workmanship specified herein. No person is authorized to bind Atlas Copco Hurricane LLC for any other warranty.

WARRANTY CLAIM PROCEDURE FOR DISTRIBUTOR

Any problem encountered by a customer should be reviewed and, if it cannot be determined if the problem is covered by warranty, contact the factory.

The procedure for handling warranty repairs on items not warranted by Hurricane is on the back of this form**.** **Do not process a Hurricane warranty claim form on these items.**

The flow of events is:

1. Customer Experiences Failure – customer's first concern is to repair the equipment and return it to service as soon as possible.

2. Repair Parts – if parts needed for repair are not in your inventory, order the parts from Hurricane Compressors parts department in the same manner as any other parts order.

3. Parts shipped and Billed – parts order will be shipped and billed to your account. After repairing the unit, complete the three-part Warranty Claim Form and return the white and yellow copies to Hurricane Compressors **within 30 days of the actual work.**

4. Return Material Authorization (RMA) Number – if it is necessary to return the failed parts to Hurricane Compressors, an RMA number will be issued to you. This number is to be marked on the outside of the package or on the packing slip. The parts must be returned prepaid – **no CODs will be accepted.**

5. Processing the Claim – upon receipt of the Warranty Claim Form, a warranty claim number will be assigned. The warranty department will evaluate the claim and, if it is valid, a credit memo will be issued. If partial warranty is allowed or the warranty claim is denied, you will be advised in writing.

NOTE:

For items warranted by their respective manufacturers, the procedure is as follows:

Engines and engine related items

1. Contact the nearest industrial engine manufacturer dealer/distributor as listed in the Engine Operation and Maintenance Manual or Service Distributor Directory supplied with the compressor. **Do not process a Hurricane Compressors warranty claim form.**

2. If a dealer/distributor cannot be located, contract the Hurricane Compressors factory.

Batteries

Attached to each battery or in the technical literature package on each compressor is a warranty tag with the name and phone number of the East Penn Manufacturing Company (1-800-237-6162 or in Florida call collect 813-581-1393), manufacturer of the Deka battery. Section A is to be filed out by the customer on receipt of the air compressor.

If you have a warranty problem, call the appropriate phone number for your location with the following information: The problem, name of the battery, where you purchased it and your location. They will inform you of the nearest distributor.

Limitations

If a replacement part is purchased from someone other than the Hurricane Compressors factory, the warranty reimbursement should be handled through the source for the part.

Warranty reimbursements on replacement parts from Hurricane Compressors will be at your cost.

ATLAS COPCO HURRICANE LLC
1015 HURRICANE ROAD
FRANKLIN, IN 46131

317.736.8416 FAX 317.736.3831
TOLL FREE 800.428.9703

317.736.3800 FAX 317.736.3801
TOLL FREE 800.754.7408

WARRANTY CLAIM

Claim# ____________.

Received______________________

Note: All claims must be filed within 30 days of the actual work. Parts must be tagged and held for 60 days from the date of claim.

Date____

Your Customer Name___________________________

Street Address_______________________________

City, State, Zip_____________________________

Type of Equipment (Compressor-Air or Gas, Part, etc.) ______ Model No. ______ Serial # (Found on Data Plate) ______

Date Sold to Your Customer ______ Date of Failure ______ Amount of Hours Used ______

Give accurate detailed description of problem and how it was handled below, or attach separate paper.

BOOSTER FAILURES (MUST BE FILLED OUT COMPLETELY)

SUCTION PSI	DISCHARGE PSI	RPM	COOLANT TEMPERATURE	OIL PRESSURE

PARTS LIST

QTY	PART NUMBER	PART NAME	NET COST	QTY	PART NUMBER	PART NAME	NET COST

LABOR

DESCRIPTION	DATE	HOURS	RATE	NET COST

☐ Parts are being held for instructions

☐ Parts are being returned prepaid per instructions form

____

☐ Other Disposition:___________________

____

____

Your account # ______________________

Distributor ______________________

Street ______________________

City and State ______ Zip ______

Name (Please Print) ______ Title ______

Telephone # ______ Fax# ______